उच्चतर माध्यमिक पाठ्यक्रम

374 – सैन्य अध्ययन

पुस्तक – 1

राष्ट्रीय मुक्त विद्यालयी शिक्षा संस्थान

(शिक्षा मंत्रलय, भारत सरकार के अंतर्गत एक स्वायत्त संस्था)

ए-24-25, इंस्टीटयूश्नल एरिया, सेक्टर-62, नोएडा-201309 (उ.प्र.)

वेबसाइट : www.nios.ac.in, टोल फ्री नं. 18001809393

NIOS SENIOR SECONDARY - MILITARY STUDIES (374)

Complete Textbook (18 Lessons)

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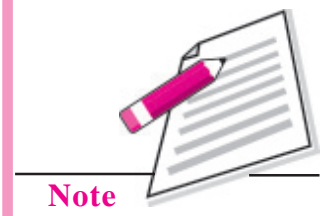

Note

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IMPORTANCE OF MILITARY STUDIES

Military Studies is also known by various names like defence and strategic studies, military science, war and national security studies, war and strategic studies etc. Military Studies is currently taught only in a handful of colleges / universities in India. This raises two questions. One, what is the importance of Military studies? Two, why should you as young students study this subject? As you would have studied in history mankind always suffered from wars but never gave up the need to fight wars. In the modern world, the need to wage wars has changed and the methods of fighting too have changed.

The importance of having strong armed forces and the need to protect the people against various threats is a constant feature of our life. Knowledge of military security, how armed forces are organised to fight a war and what is the art of warfare are questions, which get answered by studying military studies. By learning about the military, the Government and the armed forces the people become more awakened and can handle situations better. The military study helps the leaders to understand the importance of Armed Forces in defending our motherland.

Objectives

After studying this lesson, you will be able to:

- explain the meaning and importance of military studies;
- describe the curriculum of military studies for soldiers and
- emphasise the need for studying military studies.

1. 1 Introduction to Military Studies

Military studies from ancient times, deals with all subjects pertaining to the military and how soldiers and kings are trained in the art of fighting. It can be defined as the study

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of **military organisations, analysis of security threats** to a country, the **art of warfare** and the method of using the armed forces in the defence of the nation. Let us understand the meaning of each of these words used in the definition.

(a) **Study of Military Organisation -** Ancient armies started with foot soldiers and later went on to create the Chaturangabala force consisting of chariots, elephants, cavalry and infantry. Our ancient gurus thought about this organisation of the army. They taught this subject and the soldiers learnt to use the horses, elephants and weapons. Study of military organisations commenced from ancient times and continues even today.

(b) **National Security -** Any kingdom or nation faces enemies, threats from environment, threats from natural calamities etc. It is important to understand the type of threats and methods to overcome the threat. Therefore, an analysis of national security will tell us about how big the army should be and how should it be organised to fight against all identified threats.

(c) **Art of Warfare -** Warfare is defined as the activity of fighting between two armies. When two nations fight they employ different strategies and tactics to win the battle. Armies have to be trained to use different strategies and tactics against enemy forces to win. Therefore this subject is important for soldiers and officers to learn the tactics and strategies used in battle.

1.2 Curriculum for Military Studies

After the definition of military studies let us look at the subjects that are included in the curriculum for military studies. The subjects that would be taught include the following:-

i) **Skill at arms -** Soldiers were taught the use of personal weapons and made to practice daily, to become an expert in handling the weapons. Different weapons were used by the ancient armies in which training was required. These were different types of Gadas, varioys types of weapons used by Central Tribes and weapons of ancient South Indian armies.

ii) **Skill of using bow and arrow -** One of the major skills required for the soldiers during that period, was to learn the use of 'Bow and Arrow' during battles.

Other skills a solider needed were horsemanship and fighting with enemies on horseback during battles.

1.2.1 Important Aspects in Military Studies

i) **Terrain -** Study of terrain where the battle will be fought. This subject helps in making defences, forts (in olden times) and creating obstacles for the enemy.

ii) **Tactics -** Tactics is the art or plan of deploying army units to maneuver to a position of advantage in a battle. Different tactics have to be thought over against different types of enemies and different terrain (fighting in mountains will be

Note

different from fighting in deserts) etc.

iii) **Maps and Astronomy -** These are required for navigating and moving from one place to another. In ancient times there were no maps and armies used directions, movement of sun and stars to march from one place to another.

(iv) **Leadership -** Military leadership is an art a creative activity based on character, ability and mental power. It is one of the most important factor in war fighting.

(v) **Logistics -** The armies have to be equipped and supplied essential items during a battle. Logistics becomes important to win a battle.

1.2.2 Ethics of war Fighting

Since olden times India always faught a just war - 'Dharam Yudha. It means, the king fought a war only when it was required for the welfare of the kingdom. Similarly, the warrior or soldier had a code of conduct. Being disciplined was the first code. Some of the warrior codes or laws that were followed by ancient armies in India were:-

- A warrior (Kshatriya) in armour must not fight with one who is not wearing armour.
- One should fight only one enemy and cease fighting if the opponent is disabled.
- Aged men, women and children, the retreating, or one who held a straw in his lips as a sign of unconditional surrender should not be killed.

Intext Questions 1.1

1. Explain the meaning of Military Studies.
2. What is meant by art of warfare?
3. Name any three subjects taught in military studies.

1.3 Why should we Study Military Studies?

Military studies should be taught to all soldiers and officers who are part of the armed forces of a country. There is no doubt in this. Where if we say that soldiers must study this subject, the reason why they should be studying it must be understood well. Having seen the curriculum in the previous paragraph of this lesson, the reasons all soldiers to study it; are as follows:-

- A soldier has to be highly professional and proficient in the use of weapons at all times. This involves learning about the weapon and continuously practicing with it.
- Armies of a nation have to be prepared for war at all the times. Therefore to be ready to fight at any time armies have to be trained well.

Note

- A good army is one that can plan its strategy and tactics well and execute it in the battle. Study of Art of Warfare is therefore very important.
- A soldier who is taught and trained well in fighting remains happy. His morale is high and he goes to battle very confidently.
- In a democracy, the political leaders direct the armed forces to prepare and go to war. The ministers, the political hierarchy, the bureaucrat who assist the government must also learn about military. They decide on how the army should be organized, direct the army to fight when required, plan and execute national security. The government is responsible for the defence of the country and the armed forces are means to archieve national security.

1.3.1 Army

An army is judged by seeing how well its soldiers are trained. Soldiers who are well trained always perform well. It gives them added confidence in doing their task. In ancient times and even now, a well-trained regular army enjoy the confidence to win battles when required.

What You Have Learnt

- Military Studies is the study of military science, war and national security studies, war and strategic studies. Armed forces do require this study to be able to protect the people against various threats - war, natural calamaties and disasters. Art of warfare is to handle the war or war like situations. Art of warfare is to be able to employ different tactics and strategies to win the war.
- Curriculum for Military Studies includes skill at arms, skill at using bow and arrows, skill to use horses in war and to be able to fight the enemies on the horse back.
- Military Studies have important aspects like : Terrain, Tactics, Maps and Astronomy, Military Leadership, Logistics. Soldiers do have a code of conduct during war. It is against ethics of war to kill old aged people, women and children also the disabled soldiers and soldiers who have surrendered. Military Studies is need to have an organised and disciplined armed force. It must to proficient in using different weapons and ready at all times to protect the people and fight a war confidently.

Terminal Exercises

1. Differentiate between `Tactics' and `Strategy' ?
2. Who all should study Military Studies ?

3. Why is study of Terrain important to win a battle?

Answers to Intext Questions

1.1

1. Military studies can be defined as the study of military organisations, analysis of security threats to a country, the art of warfare and the method of using the armed forces in the service of the nation.

2. Warfare is defined as the activity of fighting between two enemies. The tactics and strategy used in battle constitutes art of warfare.

3. The study of Terrain over which battle will be fought is important to formulate strategy, tactis and logistics. This will help in over coming the enemy and winning the battle.

Note

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2

CONCEPT AND EVOLUTION OF MILITARY STUDIES

From history of India you may have learnt of how armies were formed and how they protected the people. If armies have been there since long and they are an essential part of a society, then it is important to know how armies function and how they should be used by the Government. So, what is Military Studies? Military studies deals with all subjects pertaining to the military and how soldiers and kings are trained in the art of war fighting.

The lessons in this book will answer questions such as how are the armed forces organised to fight a war? what are the rank structures? What are the weapons with the armed forces? What is the role and responsibility of armies in today's world? How should the armed forces be used by the government? How was the military trained in olden times? How did the training change with time?

Objectives

After studying this lesson, you will be able to:

- describe the military education organisation in ancient India;
- compare the military studies subjects as taught by ancients and as taught today and
- trace the changes that came with changes in the armies.

2.1 Military Studies in Ancient India

Before learning about military studies, it is important to know about the education system of ancient India. First was the system of Gurukul. It was basically a residential school where all children including the children of the king were sent to learn. Important points to know about the Gurukul system are as follows:-

(a) It was a residential school where the Guru or teacher had a house. The teacher and the student stayed together in the Gurukul.

(b) Students stayed in the school for about 10 years to learn many subjects.

(c) The subjects taught included language, grammar, science, mathematics and vedas.

Note

(d) The Guru also taught Military subjects such as use of weapons, physical training and art of warfare.

(e) Military subjects were compulsory for all students including sons of kings.

(f) Life in a Gurukul was tough and a strict disciplined routine was followed.

(g) Education was free and it included boarding and lodging at the Gurukul. It was possible to give free education in those days because the king and other wealthy people gave money to run gurukuls.

(h) The concept of Gurukul was living with the teacher and helping the teacher with daily activities. This included farming, cleaning, woodcutting etc. The students therefore learnt practical aspects of living. By doing this, students learnt theory and practicals together so that every student could become a person with good character.

2.1.1 Types of Schools

Apart from Gurukul system there were other types of schools. In South India, temples were the centres of all cultural activities and educational institutions formed part of temple establishments. There were schools and colleges in important temples. In certain place there were post -graduate institutions to impart higher education in special subjects.

The educational institutions attached to the temples were known as Salais. These were endowed Schools of a residential type, where scholars received free tuition as well as free boarding and lodging, clothing and other amenities till they completed their studies. Chera King Ay first established the system of 'Salais' in Kerala around 8 A.D. The syllabus and method of teaching were similar to the Gurukul system. Along with the Salais was the Kalari School which specialised in martial arts and training of soldiers.

2.1.2 Kalari and Physical Education

Kalari was one of the most important educational institutions of South India.

Fig. 2.1 : Kalaripayattu

Note

It was a military school where general education was imparted through a rigorous course of physical training and the study of the science of offence and defence. The Rajas of Kerala were great patrons of learning and to them are credited the establishment of Kalaris in Military Schools. It was presided over by the Panikkar or Kurup.

The youth of the land were taught the use of weapons as well as marital arts such as fencing, boxing and wrestling. Even the Namboothiri youths received military training in the Kalari during the wars of the 11th century when the Kalari system came into vogue. The training received in the Kalaris was called Kalaripayattu.

It was a regular and full-fledged scheme of physical education intended for the youth of the land. The most promising of the trainees were taught the marmas, viz, the vulnerable parts of the body. Kalaris were intended to foster martial spirit of the Nairs and to keep them fit for war.

2.1.3 Physical Education

During ancient times, physical fitness was given prime importance, especially by the kings and the higher-class warriors. Physical education consisted of strength training; running; swimming; weight lifting. Along with physical education games formed an important curriculum of training.

Ancient India had a rich tradition of games that were played and passed on through generations and cultures. Games were not only meant for leisure but also to develop mental capabilities and maintain physical fitness. Games played in ancient India were related to military tactics and strategy. Popular games played by soldiers include Chaturanga,Chess called Ashatapada or 64 squares, Wrestling and Archery.

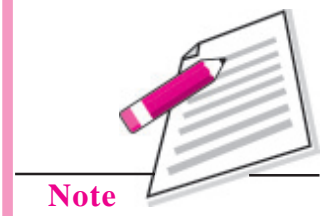
2.1.4 Places for Higher Education

Apart from Gurukuls, there were Academies for higher education, similar to what we call colleges. These were called *Parishads, Ashramas, Vidyapeeth, and Ghatikas* etc, depending upon the subjects being taught. Some of the most famous Indian institutions known worldwide in those times were Takshashila and Nalanda universities.

Vallabhi, Sringeri and Kanchi were other places of learning in ancient India.

ACTIVITY 2.1

Do you know how to play chess or Chaturanga? Well, look up the internet and learn how Chaturanga and chess are played. This helps in training the mind to formulate strategy to defeat the opponents king and army.



Note

Intext Questions 2.1

1. Explain any two features of the gurukul system of education.
2. Name any three Academies in ancient India for higher education.
3. The name of the military school in ancient Kerala was _____.
4. Normally a student spent _____years of his life in a Gurukul.

2.2 Military Education

Military science was generally called Dhanurveda. In Ashrams or Gurukuls there were several departments. The department that dealt with military studies was called Mahendrasthana. You may have learnt in History about how armies were formed and what weapons were used by soldiers.

All armies in India had chariots, elephants, cavalry and infantry. It was called Chaturangabala. So how did the soldiers learn to fight? Military education was organised into two types of teaching. First was the individual training of the soldiers. The second was training the army in fighting as a combat unit.

2.2.1 Individual Training

All soldiers and sons of kings had to attend Gurukul with all others. All students were treated as equal. Only those students who had the skills to handle weapons were taught Dhanurveda or the art of fighting with weapons. In other words Gurukul was the first step in learning the art of fighting.

In ancient times, military education was not only organized by the State, but also by individual teachers too who would undertake this duty. In every village, there were military training camps where villagers were given military education for self-defence.

2.2.2 Collective Training

After their basic education in the Gurukulam, individuals were enrolled as soldiers and organised into various units of the army. Each unit had a specific role in war. The soldiers in the cavalry were experts in horse riding and fighting on horseback. Similarly, the charioteer was a good driver who could take the chariot with speed to the given place.

The elephant army was different from the cavalry. All these separate units of the army needed specialised teaching in handling the horses, elephants, etc. and also skilfully managing them in battle. You must have heard of Chanakya, who was a renowned philosopher, scholar and teacher under Chandragupta Maurya. His famous work is 'Arthasastra'. In his book he mentions that army used to assemble at one place every

Note

day in the morning and start their training. Typically the training started with physical training followed by use of individual weapons. Soldiers handling animals had to spent time with their animals and train with them. The leaders would also train the soldiers to fight as a team and follow the tactics.

2.2.3 Administration of the Army Units

Apart from training the soldiers and the army units, there were departments looking after administration of the army units. The officers, men and handlers were taught subjects specific to their job. For example an elephant handler learnt about animal behaviour, controlling the animal, what to feed and when to feed the animal, etc.

Officers such as the Senapathi were required to have knowledge about law and justice, in order to keep the soldiers disciplined.

The curriculum for the princes was Dhanurveda, Nitishastra, Siksha (lore) of elephants and chariots, Alekhya and Lekhya (Painting and Writing). Langhana (jumping) and Tairana (swimming).

Military education is very different from other form of education. The training of leaders and soldiers is as per their role & task in a battle.

Intext Questions 2.2

1. Name the department that taught military studies in ashrams/ Gurukuls.
2. Name any three subjects taught to the Princes in ancient India.

2.3 Evolution of Military Studies

From Vedic times to modern India, a number of changes happened as we have learnt in history. With the Muslim invaders came the Islamic system of learning in Maktabs and Madarsas. After the Muslims came the British. They brought the English method of teaching and organising schools and colleges. While both, the Muslims and the British encouraged higher education, the concept of educating soldiers and officers of the military also changed with time.

The British set up specialised academies for training officers. Training centres for soldiers were established at different places. Teaching in military studies became different for soldiers and officers. It was no longer a common academy for both the soldier and the officer. For officers Indian Military Academy was established and for soldiers Regimental centres at various locations were opened.

Note

2.3.1 Military Education in Medieval India

We have seen how soldiers were trained in the art of fighting in ancient India. Let us see what changed came when Muslims invaded India and established Mughal rule. What changed during Mughal rule and in the rest of India ? Major changes were:-

- Use of fire arms;
- Use of artillery or guns;
- Use of horse cavalry and archers on horse back;
- Changes in tactics in the battlefield.

Because of these changes, the subjects changed. With a change in subjects the teaching methods and places of training also changed. For example, in olden times any open field could become a school. With the advent of firearms and guns, large areas were identified to train soldiers where specialised facilities like firing ranges were established.

Why were large areas required for training in artillery guns? The need for safety from firearms and the longer distance to which guns could aim and fire, were the reasons for the requirement of large areas.

2.3.2 Stages of Training in Armies

In the medieval period, training of the army consisted of three parts -

THREE TIER TRAINING OF ARMIES IN THE MEDIEVAL AGE

Table 2.1 - Training Structure

(a) **Training for Combat :** Combat training was organised for individual soldiers as well as for the army units. This training also included games that helped in combat. The army had to be alert and ready at all times for war.

Therefore, their training was continuous and it was part of daily routine for the soldiers to train for battle. The basic training for combat consisted of the following types of training:-

Note

Table 2.2 - Types of Training

(b) Sports and competitions : Armies the world over believe that sports is a very useful form of training a soldier for battle. The influence of sport was crucial for instilling a warrior ethic and team spirit. The virtues displayed on the sporting field were also the ideal virtues of a soldier. The games and competitions organised were:-

(i) Armed and Unarmed combat;

(ii) Archery; horse racing and chariot racing;

(iii) Boxing, Wrestling and swimming competitions;

(iv) Hunting.

c) Benefits of Games :

1. Build essential virtues of Strength, Courage, Chivalry and fair play
2. Instil fighting spirit and ability to win
3. Mental Fitness - Quick Thinking
4. Build Camaraderie among Troops and Officers

(d) Inspections : A well organised kingdom had good practices of keeping its army trained and ready for war always. It was also necessary to carry out inspections to check their state of readiness. Inspections by the King, Minister in charge of army and the Senapathy were conducted periodically.

During such inspections, some sort of drill and manoeuvres by the army units were shown to the inspecting officer. The commanding officers were also expected to show proficiency in basic military skills like horsemanship, archery and musketry, and their troops were supposed to practice with their weapons regularly.

2.3.3 Military Education in British India

'There is not a country ' wrote Thomas in 1891 'where the love of learning had so early

Note

an origin or has exercised so lasting and powerful an influence'. According to him 'The English found in India, a widespread style of elementary education and higher education, of which the former was mainly practical while the latter mainly literary, philosophical and religious.

For about 150 years, the British were involved in trade and conquest in India. The educational training of the Indian troops started with the establishment of the East India Company. The beginning of an educational system for the army in India can be traced to the establishment of the British Regimental Schools, which provided training to the British troops.

Some of the British Regiments had brought the sergeants who were called "The School Master", along with them for the purpose of imparting instructions to their troops. But the number of schoolmasters and mistresses were negligible in proportion to the strength of the troops. As a result, the commanding officers were permitted to appoint educationally qualified non- commissioned officers as acting masters. Thus, a new system of formal education of troops was started.

2.3.4 Education under the Crown

From 1774 to 1785 British East India Company opened a number of regimental centres for British and European troops. The East India Company did not bother too much about educating Indian sepoys. However, after the 1857 mutiny, the Queen took over the reigns as new ruler of India, from The East India Company. New and more army units with native Indian sepoys were raised. Far reaching changes took place in army education under the Crown. These were as follows:-

(a) Aims and objectives of educational training were defined for the first time.

(b) Organizational set up was worked out to keep pace with the developments of educational training from time to time.

(c) Army certificates were introduced and linked with pay and promotion.

(d) Roman Urdu was adopted as the medium of instruction for the army.

(e) Training directives were issued for implementation of the educational training.

(f) Army Educational Corps was raised in 1921 to train instructors for the British and Indian troops.

2.3.5 Indianization of Military Training

During the pre-independence period, the Indian army had a two fold pattern of training. The soldiers were recruited from different regions such as Punjab, Tamil Nadu, Bihar, etc. Each of these regiments had Regimental Centres where the troops received formal education and training. Separate Academies were built for officers.

Note

Apart from these centres, a number of schools were also set up. These were:-

- Rashtriya Indian Military College, Dehradun was founded in March 1922. This college provided basic school education and physical training for those who wanted to become officers in the Indian Armed forces.
- Chail Military School (oldest military school) was established in February 1922.
- Ajmer Military School
- Belgaum Military School
- Dholpur Military School
- Sainik Schools were opened in each state as feeder institution for National Defence Academy, Pune after 1962 war.

ACTIVITY 2.2

Use the internet and see the link given to understand the history of sports.

https://www.theatlantic.com/video/index/552878/history-of-sports/

Make a brief report of about one page.

Intext Questions 2.3

1. In the Islamic system of education the schools were called _____ and _____.
2. What were the subjects taught in Military studies to the soldiers in Medieval India?
3. Describe the three-tier training for armies in Medieval India.

What You Have Learnt

- Concept of learning Military Studies in Ancient India was through the system of Ashrams and Gurukul.
- There were specialised schools for combat training.
- Games were considered important part of a soldier's life. It helped in physical fitness and in increasing battle skills.
- Soldiers were trained in individual skills as well as collectively as a unit. Battle drills and manoeuvre were taught and practiced everyday.
- The training of soldiers for war changed with time and with invention of new weapons and ammunition.
- In the medieval period, Muslim system of education was followed. However, army training was done as a three-tier system.

Note

- British India changed the form of training army sepoys. The system of education of soldiers was formalised. Regimental centres became the backbone of soldier training.
- British also started a number of military schools for basic education of children wanting to join the army.

Terminal Exercises

1. Explain the importance of physical education for the army.
2. Explain the meaning of "collective Training".
3. Differentiate between Soldier training and unit training, followed in Medieval India.
4. Name any four schools started by the British for children.
5. State the benefits of games in military?

Answers to Intext Questions

2.1

1. (a) It was a residential school;
   (b) The Guru and student stayed together;
   (c) Military related subjects was taught by the Guru.
2. Takshashila, Nalanda and Vallabhi schools.
3. Kalari.
4. 10 years.

2.2

1. Mahendrasthana.
2. Dhanurveda, Nitishastra, Siksha (lore) of elephants and chariots

2.3

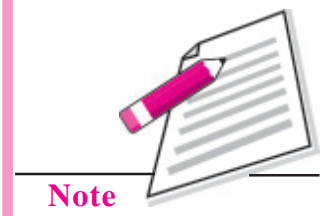
1. Maktabs and Madarsas.
2. (a) Personal weapon(sword, spear, bow and arrow)
   (b) Horsemanship
   (c) Musketry

Note

3. (a) Training for combat

(b) Sports and Competitions

(c) Inspections



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NEED OF MILITARY STUDIES TODAY

In the previous lesson, you have learnt the concept and evolution of military studies through the important periods of our history. The changes in military education from ancient ages to modern times was a result of improvements in weapons and changes in warfare techniques. Science and technology played an important role in this transformation of the armies.

Today we see modern weapons and newer forms of warfare. Powerful nations are trying to dominate the weaker nations. There is terrorism and insurgency, cyber warfare and natural disasters to deal with. In an anarchic world, armies have to be prepared all the time to fight a battle. Governments must understand use of force to overcome situations affecting national security.

Therefore the subject of military studies has not only become very important but also complex. In this lesson you will learn the changes in the army, its weapon systems and how it has impacted warfare.

Objectives

After studying this lesson, will be able to:

- assess the need for transformation of the armies;
- explain the transformation of training of the army and
- examine the modern system of training Armed Forces.

3.1 Transformation of Armies over the Ages

Armies changed with time. There were new discoveries and man understood the use of metals such as iron, copper, etc. He made an alloy called bronze. With the discovery of metal, he made weapons of metal which were more lethal and it could also be made in different shapes. Thus armies changed old methods & evolved new tactics and methods to fight their enemies. See figures below to learn the different types of weapons:

Note

Fig. 3.1 Weapons Through the Ages

3.1.1 Transformation in Warfare

A study of military history will tell you how warfare had changed with time. In the ancient age, it was the 'Chaturangabala' force consisting of Cavalry, Elephant, chariots and infantry. Warfare was a series of set piece battles at a pre defined battle ground. While armies used various strategies and tactics to win a war, the fighting per se was static in nature.

Over the years, as metallurgy improved, new weapons were introduced. The chariots were not seen in battle in the medieval age. Cavalry was the arm used for speedy movement of troops to surprise the army. It allowed attack from unexpected directions and therefore was the most used in this age. As science improved, we saw the introduction of wheeled vehicles, guns and ammunitions.

The Mughals used guns extensively to win battles. A soldiers personal weapon of sword, bow & arrow/spear were replaced by rifles and machine guns in the nineteenth century. World War I & II was the turning point for new forms of warfare when trench

Note

war fare was introduced. See Table 3.2 below to get a perspective of the changes that have happened over different periods.

PERIOD	TYPE OF ARMY	TYPE OF WARFARE	WEAPONS
ANCIENT AGE	Chaturangabala	static or positional	swords, spears, bow & arrow etc.
MEDIEVAL AGE	infantry, cavalry, artillery	positional as well as maneuver	swords, bow & arrow, guns
BRITISH ERA	cavalry, infantry, artillery, signals, engineers, Airforce, Navy	Maneuver, air and naval warfare	Tanks, Artillery, Rifles, Machine guns, Bombs, Torpedos, Missiles & Rockets.
MODERN DAY	Special forces, army, navy and air force	Diplomatic war, Terrorism, Insurgency Hybrid warfare not contact warfare	Drones, missiles, nuclear weapons, Helicopters, Air defence weapons

Table 3.2 - Transformation in Warfare

3.1.2 Impact of Technology on Warfare

Science changed the nature of warfare due to newer inventions. The important discoveries by man that revolutionised warfare were as follows:-

- Metals and wheel (Ancient age);
- Gun Powder (Medieval age);
- IC engines (motor cars, railway engines, tanks)
- Aircraft
- Naval battle ships, submarines, torpedoes;
- Missiles;
- Wireless communication;
- Nuclear bomb;
- Improvised Explosive Device (IED);
- Drones

Note

What we saw was just the impact of technology on weapons. As part of the modernisation and changes in the armies, the organisation also changed. Some of the new branches in the army were the Engineers, Signals, Army Supply Corps, Army Ordnance Corps, Intelligence, Air Defence, etc. Obviously, each of these arms had its own specialisation.

The soldiers and officers had to be trained to handle the role and responsibility of that corps. Army, Navy and Air Force have to now fight together to win wars. This gave rise to Tri-Service organisations and Tri-Service training.

Intext Questions 3.1

1. Name any three weapons of a modern day soldier.
2. What was the type of armies in the British Era?

ACTIVITY 3.1

a. Use the internet and see the link given to understand the history of weapons.

https://www.theatlantic.com/video/index/393683/a-brief-visual-history- of-weapons/

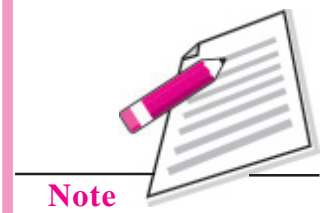
Download and print/draw at least two weapons each, used in ancient, medieval and modern India.

b. From the diagrams given below differentiate between the skills that ancient soldier had to learn and those that a modern soldier has to master to fight a battle.

Spear Wapon

Talwar

Source-https://www.indianetzone.com/photosgallery/51/talwar.jpg



Note

3.2 Transformation in Training

You have already learnt how a soldier was trained in the ancient age and in medieval era. During the British period, armies were modernised and became more mobile. The new methods of fighting and modern weapons made it necessary to change the subjects being taught. What aspects of the army changed during the period before World War II ?

- Army became Armed Forces with the raising of Air Force and Navy.
- Training in Military subjects became specialized to each of the three wings of armed forces - Army, Navy and Air Force.
- Re-organization of army was done to suit the new methods of battle. Army raised additional arms such as Combat Engineers (building bridges and roads, clearing obstacles, etc), Signals (telecommunication).
- The standard infantry had rifles, machine guns, guns, mortars, Anti Tank Missiles. Cavalry became an arm with battle tanks. Artillery had long-range guns and rockets, self-propelled guns.
- The basic soldier training of skill at arms was the same, except that the subject became complicated and intense. A rifle replaced the sword.
- All three services of Army, Navy and Air Force have to fight the war together. Hence Tri-service training was introduced.

3.2.1 Changes in Training the Army

You have seen in the previous lesson how soldiers were trained and taught military skills in the Ashrams and Gurukuls. As the armies transformed and acquired greater capabilities, the method of training also changed. Let us see in a tabular form what were the changes in the subjects taught to the soldiers.

Note

Subject	Ancient Soldier	Modern Soldier
Skill at arms	Fighting with a sword/ spear/bow&arrow	Aim and shoot with a rifle, machine gun, pistol, sub-machine gun
Parts of weapon	Parts of sword/spear	Larger number of parts of rifle/ machine guns/ guns/tanks
Maintenance	Sharpening swords and arrows, cleaning spears, swords, shield	Specialized cleaning of moving parts, mainte-nance of Metal, wooden/ plastic parts; safe storage of weapon; main-tenance of ammunition etc.
Physical training, Sports and Games	Yes	Yes
Special subjects	None	Use of small arms weapons, different types of ammunition guns, machine guns, faults rectification, communication devices, construction of bridges.

ACTIVITY 3.2

a. Look up the internet and list the type of weapons used by infantry soldiers in World War I.

b. Compare the list with the infantry weapons of World War II.

3.3 Modern System of Training Armed Forces

3.3.1 School System

In the previous lesson you learnt about the Indianisation of military education wherein, the raising of Military schools was highlighted. The Sainik Schools were established after 1962 and one managed by the Sainik Schools Society under Ministry of Defence. as feeder institutions for National Defence Academy, Pune.

They were conceived by V. K. Krishna Menon, the then Defence Minister of India, to rectify the regional and class imbalance amongst the Officer cadre of the Indian Military, and to prepare students for entry into the National Defence Academy (NDA), Khadakwasla, Pune and Indian Naval Academy. Today there are 26 such schools covering all the states of the country.

3.3.2 National Cadet Corps (NCC)

Further, at the school and colleges, the system of NCC was established. The NCC in India was formed with the National Cadet Corps Act of 1948. It was raised on 15 July 1948. It is a Tri-Services organization, comprising the Army, Navy and Air Force, engaged in grooming the youth of the country into disciplined and patriotic citizens.

The National Cadet Corps in India is a voluntary organization, which recruits cadets from high schools, colleges and universities all over India. The Cadets are given basic military training in small arms and parades.

The officers and cadets have no liability for active military service once they complete their course but are given preference over normal candidates during selections based on the achievements in the corps. You would be surprised to know that, during the Indo-Pakistani war of 1965 & 1971, NCC cadets were responsible for the second line of defence. They organized camps to assist ordnance factories, supplying arms and ammunition to the front and were also used as patrol parties to capture enemy paratroopers.

The NCC cadets also worked hand in hand with the Civil defence authorities and actively took part in rescue works and traffic control. The NCC has a lady's wing, which gives equal opportunity to women to take part in all activities of the NCC.

3.3.3 Specialised Academies

As you have seen the transformation of the modern army with an airforce and naval component and superior weapons, the training also became specialised. Each wing of the armed forces had a set of academies to train their personnel.

(a) **Soldier Training -** Army has regimental centres where the recruits and soldiers of a regiment are trained. In addition, training academies train personnel in specialised aspects of the respective corps/branch of the army. Unlike the army regimental centres, the Navy and the Air Force have various academies for training their personnel in each of its branch.

(b) **Officer Training -** Officers of each of the three services undergo basic training after school at The National Defence Academy, Khadakwasala, Pune. Those who graduate from civil colleges are also trained at the Indian Military Academy

Note

(IMA)/ Naval Academy/ Air Force Academy and The Officers Training Academy(OTA).

A tabulation of some of the training establishments of the Indian Armed Forces is given below.

Feeder Institutions	
EDUCATION & TRAINING	• Sainik Schools • Military schools • Rashtriya Indian Military College (RIMC)
TRI SERVICE	• National Defence Academy • Defence Services Staff college • National Defence College
INDIAN ARMY	• Officers Training Academy • Army War College • College of Military Engineering • School of Artillery • Counter Insurgency and Jungle Warfare School • Indian Military Academy • Infantry School • Armed Corps Center & School
INDIAN NAVY	• Indian Naval Academy • INS Chilka (sailor training) • INS Satvahana (Submarine training) • INS Garuda (naval aviation training)
INDIAN AIR FORCE	• Airforce Academy • Airforce Technical College • Airforce Administrative College

Table 3.4 - Military Training Establishments of India

Note

Intext Questions 3.2

1. In which year were the Sainik Schools started in India?
2. National Cadet Corps Act was promulgated in the year _____.
3. Name any three Military Schools in India.

What You Have Learnt

- Military studies changed over the ages due to changes in military organization, introduction of newer weapons and due improvement in science and technology.
- Method of warfare also changed due to the changes in weapon system and the organizational changes.
- Changes were made in the subjects being taught to a soldier. The curriculum of military studies adapted to the changes in warfare and weapons.
- There was a transformation in training a soldier in India.
- National Cadet Corps (NCC) was created in 1948 with the aim of training the youth of the country on basics of army training.
- Schools like Sainik schools and Military schools were established. Academies for specialized training, as per new organization of the Army, Air Force and Navy was created.
- Each wing of the Armed Forces had its own Academies as per their respective requirements to learn and train the soldiers and officers.

Terminal Excercises

1. Explain the impact of technology on weapons? Name any five changes in weapon system that changed the nature of warfare.
2. Describe the changes in the type of warfare from Medieval age to British and modern era.
3. What is meant by Specialised academies for training personnel of the armed forces?
4. Describe the modern system of schools for training students to enroll into the armed forces in India?
5. Explain the features of The National Cadet Corps.

Note

Answers to Intext Questions

3.1

1. Machine guns, Missiles, Guns and Tanks.
2. Cavalry, Infantry, Artillery, Signals, Engineers, Airforce, Navy.

3.2

1. 1961
2. 1948
3. Sainik Schools, Military schools and Rashtriya Indian Military College or Chail Military School (oldest military school) was established in February 1922, Ajmer Military School, Belgaum Military School, Dholpur Military School

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ARMED FORCES

The soldiers are faced with a variety of challenges including the difficult areas like icy glaciers, sandy deserts, mountainous jungles and the vast seas. They willingly face these challenges and are prepared to make any sacrifice for the Nation.

The values of comradeship and brotherhood pervade all ranks of the army. The soldiers lay down their lives for the three Ns - Naam (name or honour), Namak (loyalty to the Nation) and Nishan (insignia or flag of the unit/regiment or Nation). They exhibit valour when fighting the enemy. There is no discrimination on the basis of caste, religion or any other aspect. This ensures team spirit and unity. They usually choose death over dishonour. The forthrightness, integrity and dignity forms the ethos of every soldier.

In this lesson we shall learn about the different Commands of the Indian Army in greater detail as well as the Ethos of the armed forces. Before we look at the organisational structure we shall examine the ethos of the Indian Army.

Objectives

After studying this lesson, you will be able to:

- explain the role and organisational structure of Indian Army;
- describe the role and structure of Indian Navy and
- explain the role and organisational structure of Air Force.

4.1 Role of the Indian Army

The Indian Army mainly has the task to protect the territorial integrity of our country and safeguard its sovereignty from external aggression or internal disorder. The army also provides assistance to the civil administration in the event of a natural or manmade disaster. The Indian Army also participates in UN peace keeping missions by sending troops. The Indian Army maintains a high standard of operational preparedness to play any of the roles mentioned here.

Note

4.1.1 Structure of the Indian Army

The Indian Army is organised into 7 commands with 6 operational commands and one training command. These are Western Command, Eastern Command, Northern Command, Southern Command, South Western Command, Training Command, Central Command.

Fig 4.1 : Western Command (Headquarters - Chandimandir)

Fig 4.2 : Eastern Command (Headquarters - Kolkata)

Fig 4.3 : Northern Command (Headquarters - Udhampur)

Fig 4.4 : Southern Command (Headquarters - Pune)

Fig 4.5 : South-Western Command (Headquarters - Jaipur)

Fig 4.6 : Training Command (Headquarters - Shimla) - It is the only non operational command as it has all service training institute under it.

Fig 4.7 : Central Command (Headquarters - Lucknow)

Each Command is headed by a General Officer Commanding in Chief (GOC-in-C). His rank is Lieutenant General.

Note

4.1.2 Sub Divisions of the Army

The Army has further sub divisions where the soldiers are grouped into a fighting force. The combat arms are infantry and armed corps others are combat support arms and services unit. Infantry is organised as under:

Section : 10 soldiers make a Section

Platoon - 3 sections make a Platoon headed by a JCO (Junior Commissioned Officer)

Company - Three Platoons make a Company headed by a Company Commander who is a Major or Lt.Colonel in rank.

Battalion - Four companies make a Battalion. This is the main fighting unit of infantry and is commanded by a Battalion Commander in the rank of Colonel.

Brigade - Three battalions form a Brigade and commanded by Brigade Commander, a Brigadier rank officer.

Division - Three to four Brigades make up a Division headed by a Major General who is termed GOC (Division Commander). The Indian Army today has 37 divisions including Infantry, Mountain, Armoured, Artillery and Re-organised Army Plains Infantry Division or RAPIDS.

Corps - Three to four divisions make up a Corps. A Lieutenant General heads the Corp as GOC (Corps Commander).

Command- Each command is led by General Officer Commanding-in-Chief with the rank of Lieutenant General. India has 7 Commands of which six are operational commands and one training command called ARTRAC (Army Training Command)

India also has tri aservices commands, namely the Strategic Forces Command, Integrated Defense Staff (IDS) and the Andaman and Nicobar Command. These are headed by Army Navy and Air Force officers on a rotational basis.

4.1.3 Organization of the Indian Army

Indian Army is organized in two parts - Combat Arms and Services.

Combat Arms

This is the fighting forces of the Army. This comprises :

1. **Armoured Corps -** This has replaced the cavalry or horses in Indian Army. It is one of the main fighting arms of the modern army. It consists of tanks as its main weapons. They also provide vital support to the Infantry (foot soldiers) by providing cover when they are attacking the enemy positions.
2. **Mechanized Infantry -** Mechanised Infantry is the latest arm of the Indian Army.

Note

3. **Infantry -** These are fighting troops who attack and occupy captured ground. It is the most important and largest branch of the fighting forces in the Indian Army.

It is supported by combat support arms which are:-

- **Artillery -** The guns that provide fire power are under the Artillery. They are used to destroy the defences of the enemy and give infantry fire cover to capture enemy positions.
- **Corps of Engineers -** Also known as Sappers, these are Engineers who perform the operations like laying and clearing of mines, constructing bridges, roads and handling explosives. Their motto is SARVATRA or Everywhere. They are very important in increasing the mobility of the army units.
- **Corps of Army Air Defence -** The Air Defence has become imminent after the change in the character of the battlefield with the introduction of aircraft.

Their motto is Akashe Shatrun Jahi (Defeat the Enemy in the Sky).

- **Army Aviation Corps -** Adopting the motto Suveg Va Sudrid, the youngest of the Indian armed corps has helicopter which can operate in different terrains, climatic conditions and other challenges. It can utilise the ability to observe the enemy deep inside its own territory.
- **Corps of Signals -** In this information age, armies have to strengthen existing information communication and technology networks, ensure connectivity to soldiers in remote locations and provide cyber security in both peace time and in war. This is fulfilled by the Corps of Signals. Their motto is Teevra Chaukas or Intense Alertness.

Services: Apart from the Combat and Combat support Arms, the remaining army is organised under the services. Their main task is to provide logistical (arms, ammunition, rations etc.) material to the army.

The Services include the following departments:

1. Army Service Corps
2. Army Medical Corps
3. Army Dental Corps
4. Army Ordnance Corps
5. Corps of Electronics and Mechanical Engineers
6. Remount and Veterinary Corps
7. Military Farms Service
8. Army Education Corps
9. Corps of Military Police

Note

10. Pioneer Corps
11. Army Postal Service Corps
12. Intelligence Corps
13. Judge Advocate General's Department
14. Military Nursing Service

Intext Questions 4.1

1. Explain the meaning of three Ns close to a soldier's heart?
2. Name the place where Training Command of the Army is located. Explain its task.
3. What is meant by a Battalion?
4. Explain the role of Corps of Army Air Defence.

4.2 Indian Navy

The Indian Navy's motto is (शं नो वरुण:) or May the Lord of the Oceans be auspicious unto us. It is bestowed with the task of safeguarding the seas that surround peninsular India.

4.2.1 Role of the Navy

There are four roles which not only includes war fighting at sea but increasingly disaster relief, rescue and humanitarian assistance.

The Navy is not only mandated to exercise naval power against the enemy but also to defend Indian territory and maritime trade.

Naval Diplomacy is an important role of Navy where it furthers international cooperation through joint naval exercises, and ship visits to friendly countries.

Constabulary relates to the ability of the Navy to maintain law and order at sea by preventing crimes like piracy.

Benign role - Though the Navy is a military unit it performs important non military tasks too. These include:

Humanitarian Assistance and Disaster Relief like shipping people away from troubled areas; transporting essential supplies to places affected by natural calamities like floods, cyclones and earthquakes;

Search and Rescue (SAR) of boats and personnel in distress;

Hydrographic surveys and mapping of coastal and ocean territory for other countries too.

4.2.2 The Structure of Indian Navy

The Indian Navy is divided into three commands

Fig 4.9 : Western Naval Command with headquarters at Mumbai

Fig 4.10 : Eastern Naval Command having headquarters at Vishakapatnam.

Fig 4.11 : Southern Naval Command with headquarters at Kochi.

Each Naval Command is headed by a Flag Officer Commanding in chief (FOC-in-C). His rank is Vice Admiral.

4.2.3 Organisation of The Indian Navy

The Navy is broadly divided into the following branches:

Note

- Executive
- Engineering
- Logistics
- Education
- Medical

The Officers of the Navy will be employed in a variety of roles requiring specialised knowledge and training in the various branches namely executive, communication, navigation, logistics etc.

Intext Questions 4.2

1. Write the motto of Indian Navy.

_____

2. At which place is the headquarters of the Eastern Naval Command located?

_____

3. Describe the different tasks under the benign role of the Indian Navy.

_____

_____

4.3 The Indian Air Force

The Indian Air Force is the fourth largest in the world. It consists of modern aircraft and a well trained flying force that can safeguard the skies for our nation's security.

4.3.1 Role of the Indian Air Force

The main role of the Indian Air Force is to secure Indian air space and protect it from intruders. The Air Force is also tasked to undertake air warfare during conflicts. They also play a vital role in deploying troops to remote areas and assisting in logistics. They provide air support to the other arms namely Navy and Army in their operations too.

From a humanitarian point of view, rescue of civilians in times of crises and disaster is also a principal role of the Indian Air Force. Air lifting or evacuating Indian nationals from other countries in times of civil war or other calamities is also performed by the IAF.

President, Vice President or Prime Minister, Defence Minister are also provided transport facilities by Indian Air Force.

4.3.2 Structure of the IAF

The Indian Air Force is divided into three branches namely Flying Branch, Technical Branch, and Ground Branch.

The Indian Air Force is divided into five operational commands and two functional commands. The functional commands are the Training Command at Bangalore and the Maintenance Command at Nagpur. The principal task of the Functional commands is to keep the men and machines (aircraft) ready for war. The Training includes flight training (training in operating different aircraft); specialised advanced training for MIG and other fighter aircraft; helicopter training and transport Air Craft training.

The five operational commands are :

Fig 4.12 : Central Air Command - HQ Allahabad, Uttar Pradesh

Fig 4.13 : Eastern Air Command HQ Shillong, Meghalaya

Fig 4.14 : Southern Air Command HQ Thiruvananthapuram, Kerala

Fig 4.15 : South Western Air Command HQ Gandhinagar, Gujarat

Fig 4.16 : Western Air Command HQ Delhi

"Two additional commands of the Air Force which are responsible for training and maintenance of the fleet are:"

Fig 4.17(a) Air Force Training Command, Bangalore Fig 4.17(b) Maintenance Command, Nagpur

The Commands have Air Force Stations or bases in a variety of locations.

Each Command is headed by an Air Officer Commanding in Chief (AOC-in-C). This is held by an Air Marshal.

Note

4.3.3 Organization of the Indian Air Force

Similar to the army, the Indian Air Force has self sufficient fighting units. Each of these units are grouped into larger force and placed under a Command. Under each command the sub divisions are as follows:-

Section - This is the smallest unit in the Air Force. Three aircraft make a Section. It is commanded by a Flight Lieutenant.

Flight - Two sections make a Flight. A Flight is headed by a Squadron Leader.

Squadron - Squadrons are of two types Flying Squadron and Transport Squadron. Three Flights make a Squadron. There are 18 aircraft in a fighting squadron headed by a Commanding Officer who is of the rank of a Wing Commander/Group Captain. However a Transport Squadron is headed by a Group Captain.

Wing - Two or three squadrons make a Wing. The wing is usually located at an Air Force Station. The Wing is commanded by an Group Captain/Air Commodore.

Station - One Wing and one or two squadrons make a Station. It is commanded by an Air Commodore. Larger stations are commanded by an Air Vice Marshal.

Command - An Operational Command can have nine or 16 bases or stations.

Intext Questions 4.3

1. How many Operational Commands does the Indian Air Force have?

   _____

2. Explain the term 'squadron'.

   _____

3. Explain the role of the Indian Air Force.

   _____

What You Have Learnt

- Indian Army is organised in two parts. Combat Arms and Services. Combat Arms is the fighting forces of the army and comprises (i) Armoured corps (ii) Mechanised infantry (iii) Infantry. Aprt from combat arms remaining army is organised under the services. Services include (i) Army Service Corps (ii) Army Medical Corps (iii) Army Dental Corps (iv) Army Ordance Corps (v) Corps of Electronics and Mechanical Engineers (vi) Remount and verternity corps (vii) Military Farms Service (viii) Army Education Corps. (ix) Corps of Military Police

Note

(x) Pioneer Corps. (xi) Army Postal Services Corps. (xii) Intelligence Corps (xiii) Judge Advocate General's Deptt. (xiv) Military Nursing Service.

Motto of the Indian Navy is "Sham No Varunah". It also fights for the secretary of the country and plays important role during natural disasters and rescue operation. Indian Navy is divided into three commands.

- Indian Air Force is the fourth largest in the world. It has been divided into five operational and two functional commands.
- Organisation of the Air Force starts with section, flight, squadron, wing, station.

Terminal Exercises

1. Describe the various divisions of Indian Army.
2. Explain the various roles of the Indian Navy.
3. Explain the organisational structure of IAF.

Answers to Intext Questions

4.1

1. Naam (name or honour), Namak (loyalty to the Nation) and Nishan (insignia or flag of the unit/regiment or Nation)
2. Training Command is located in Shimla. It is an all-service training institute.
3. Four companies make a Battalion. This division is the main fighting unit of the army and is commanded by a Battalion Commander in the rank of Colonel.
4. The Air Defence has become imminent after the change in the character of the battlefield with the introduction of aircraft. Their motto is Akashe Shatrun Jahi (Defeat the Enemy in the Sky). They follow the principle of "First In last out" meaning they would provide initial cover to the fighting units and attack important enemy assets while guarding our own.

4.2

1. शं नो वरुणः or May the Lord of the Oceans be auspicious unto us.
2. The Eastern Naval Command is located at Vishakapatnam
3. Under the benign role the Indian Navy performs the following tasks:
   - Humanitarian Assistance and Disaster Relief like shipping people away from troubled areas; transporting essential supplies to places affected by natural calamities like floods, cyclones and earthquakes;

- Search and Rescue (SAR) of boats and personnel in distress
- Hydrographic surveys mapping out coastal and ocean territory for other countries too.

4.3

1. The main role of the Indian Air Force is to secure Indian air space and protect it from intruders. The Air Force is also tasked to undertake air warfare during conflicts. They also play a vital role in deploying troops to remote areas and assisting in logistics. They provide air support to the other arms namely Navy and Army in their operations too.

   From a humanitarian point of view, rescue of civilians in times of crises and disaster is also a principal role of the Indian Air Force. Air lifting or evacuating Indian nationals from other countries in times of civil war or other instability is also performed by the IAF.

   President, Vice President or Prime Minister, Defence Minister the one provided transport facilities by Indian Air Force.

2. The Indian Air Force has Five Operational Commands.

3. Three Flights make a Squadron. There are 18 aircraft in a fighting squadron headed by a Commanding Officer who will be of the rank of a Wing Commander. However a Transport Squadron may be headed by a Group Captain.

Note

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5

SPECIAL FORCES

In this lesson you will learn more about the special tasks performed by these forces, the training required for it and the importance of this elite force.

Warfare involves myriad styles of engagement - on sea, in the air, on the ground, engaging in subversive activities by special forces deep within enemy territory without the enemy's knowledge. Special Forces emerged in the early 20th century, with a significant growth in the field during the Second World War, when every major army involved in the fighting created formations devoted to special operations behind enemy lines.

Objectives

After studying this lesson, you will be able to:

- explain the history of special forces globally;
- explain the history of Indian Special Forces and
- describe the detailed structure of other special forces.

5.1 History of Special Forces Globally

Special Forces are military units trained to conduct special operations. Special operations as military activities conducted by specially designated, organized, trained, and equipped forces, manned with selected personnel, using unconventional tactics, techniques, and modes of employment. Thus, Special Forces are not only elite and also special as they are used for specialised combat tasks, conducting missions that general-purpose forces either cannot perform or not with acceptable levels of risk and costs.

Often, Special Forces are confused with units that perform covert operations for intelligence organizations, operating under different authorities and employing different skill sets in order to keep the sponsorship of the units and their activities hidden. Sometimes elite military units are used to perform special operations, and sometimes Special Forces are loaned to intelligence organizations to perform covert operations.

Special Forces have played an important role throughout the history of warfare, whenever the aim was to achieve disruption by "hit and run" and sabotage, rather than through more traditional conventional combat. Other significant roles lay in reconnaissance, providing essential intelligence about the enemy and increasingly in combating irregular forces, their infrastructure and activities.

The British Army deployed two Special Forces during their border wars: the Corps of Guides formed in 1846 and the Gurkha Scouts (a force that was formed in the 1890s and was first used as a detached unit during the 1897-1898 Tirah Campaign). During the Second Boer War (1899-1902) the British Army felt the need for more specialised units.

Scouting units such as the Lovat Scouts, a Scottish Highland regiment made up of exceptional woodsmen outfitted in ghillie suits and well practised in the arts of marksmanship, field craft, and military tactics filled this role. This unit was formed in 1900 by Lord Lovat and early on reported to an American, Major Frederick Russell Burnham, the Chief of Scouts under Lord Roberts. After the war, Lovat's Scouts went on to formally become the British Army's first sniper unit. Additionally, the Bushveldt Carbineers, formed in 1901, can be seen as an early unconventional warfare unit.

5.2 History of Indian Special Forces

The history of Indian Special Forces revolves around raising of Parachute battalions by the British Indian Army and subsequently formation of Parachute Regiment in 1952. The Regiment's successfully conducted of airborne operation's and commando raids across the borders. Indian Army had commando battalions. Later these units were designated as special forces and are tasked with specialised tasks behind the enemy positions.

During 1971 conflict, a need for Naval component of Special Forces was felt after experimenting with amphibious operations (Operation Jackpot) where an amphibious landing was planned at Cox Bazaar (then Pakistani Naval Base, now Bangladesh). Marine Commandos (MARCOS) who are patterned on the lines of SEALS of USA were raised after this experience.

After the assassination of the erstwhile Prime Minister, Mrs Indira Gandhi a decision to raise a force under Ministry of Home (MHA) was taken. Besides security of VVIPs it was envisaged that this newly raised force would also cater for element of CT, anti-hijacking and anti-kidnapping.

Consequently in 1984, National Security Guard was formed. NSG was carved out of Special Group and like its creator it too, was, and is, manned by troops of Indian Army (IA), essentially from infantry.

Note

Formed in 2004, GARUDs of the Indian Air Force (IAF) are quite similar to the Royal Air Force Regiment (RAFR) of UK which was raised as a response to 'Blitzkrieg' during Second World War. Like RAFR the GARUD's primary taks is to carry operations in the enemy territory in support of the ground battles.

5.3 Structure of the other Special Forces

The structure of Special Forces consists of the newly created '*Armed ForcesSpecial Forces Division (AFSFD)',* which will function under the Integrated Defence Staff (IDS). This set up brings together all the SF units of the Army, Navy and Air Force under one commander. Presently, the new Division (AFSFD) is headed by a Major General of the Army. A brief description of all the SF units of the Indian Armed Forces are described in the following sections.

5.3.1 Parachute Regiment

The Parachute Regiment consisting of PARA and PARA (SF) battalions is the bulwark of conducting Special Operations in the country. It is also the single biggest contributor to almost all specialist units like the NSG, SG, Commando Battalion of Rashtriya Rifles (RR). The Regiment has its own training center which gets recruits from the regional recruiting centers of the Indian Army.

The unit was created in 1966 by the Indian Army. During the Indo-Pakistani War of 1965, a small ad hoc force comprising volunteers from most infantry units from North India under Maj Megh Singh of the Brigade of the Guards, operated along and behind enemy lines. The performance of this force made the powers that be sit up and take notice of the contribution and necessitated the raising of unconventional forces.

Forming the nucleus of the new force from the volunteers of the then disbanded Meghdoot Force, a battalion was raised to be part of the Brigade of Guards. Since paratrooping is an integral part of commando tactics, the unit was transferred to the Parachute Regiment. Raised in July 1966, 9th Battalion, The Parachute Regiment (Commando) was the first special operations unit. The list of PARA (SF) Battalions is:

- 1 PARA (SF) (raised 1961) converted to special forces.
- 2 PARA (SF) (ex-3 Maratha LI, converted to Special Forces)
- 3 PARA (SF) (ex-1st Kumaon, converted to Special Forces)
- 4 PARA (SF) (raised 1961, converted to Special Forces)
- 9 PARA (SF) (raised in 1966, the first dedicated Special Forces unit of the Indian Army)
- 10 PARA (SF) (raised 1967)

- 11 PARA (SF) (raised 2011)
- 21 PARA (SF) (raised 1996)

5.3.2 National Security Guard

The National Security Guard (NSG) is an Indian Special forces unit under the Ministry of Home Affairs (MHA). The NSG was established in the wake of 1984 Operation Blue Star. Since its raising the NSG has been used in the Punjab in 1986, and in Jammu and Kashmir. However it is not categorised under the uniform nomenclature of Central Armed Police Forces.

It has a Special Forces mandate, and its core operational capability is provided by the Special Action Group (SAG) which is drawn from the Indian Army. The Special Rangers Group (SRG), the police component of NSG, which also handles VIP security, is composed of personnel on deputation from other Central Armed Police Forces and State Police Forces. The NSG personnel are often referred to in the media as Black Cats because of the black dress and black cat insignia worn on their uniform.

5.3.3 Garuds

The Garud is an Indian Air Force unit which was unveiled in February 2004. It primarily protects Indian Air Force installations from terrorist attacks. Garud trainees undergo a 72-week probation training course, which is the longest among all the Indian Special Forces. The total duration of training before a trainee can qualify as a fully operational Garud is around three years. Garuds have diverse responsibilities.

Besides base protection force to protect airfields and key assets in hostile environments, some advanced Garud units are trained like Army Para Commandos and the Naval MARCOS to undertake missions deep behind enemy lines. During hostilities, Garuds undertake combat search and rescue, rescue of downed airmen and other forces from behind enemy lines, suppression of enemy air defence (SEAD), radar busting, missile and munitions guidance (lasing of targets) and other missions in support of air operations.

5.3.4 Marine Commandos

MARCOS (previously Marine Commando Force), is the special forces unit of the Indian Navy created for conducting special operations such as amphibious warfare, close quarter combat, counter-terrorism, direct action, special reconnaissance, unconventional warfare, hostage rescue, personnel recovery, combat search and rescue, asymmetric warfare, amphibious reconnaissance including hydrographic reconnaissance.

The MCF is specially organised, trained and equipped for the conduct of special operations in a maritime environment. MARCOS is short for Marine Commandos. The force has gradually acquired experience and a reputation for professionalism over

Note

the three decades it has been in existence.

The MARCOS are capable of undertaking operations in all types of terrain, but are specialised in maritime operations in Jammu and Kashmir through the Jhelum River and Wular Lake, a 65 square kilometre freshwater lake. Some MARCOS personnel are also attached with the Army Special Forces units conducting counter-terrorism operations in the area.

The first batch of marine commandos qualified in February 1987. The exclusivity of the unit lies in its competence to operate in all three mediums namely Sea, Air and Land. The MCF is specially organized, trained and equipped for the conduct of special operations in a maritime environment. Personnel from unit are deployed round the clock from Kashmir for CI/CT ops to Goa, Somalia for anti-piracy operations. The unit has always been at forefront in providing diving / civil assistance during times of natural disaster. The core tasking of MARCOS include:-

- conducting clandestine attack against enemy ships, offshore installations and other vital assets behind enemy lines;
- supporting amphibious operations including pre-assault operations;
- conducting unconventional warfare;
- conducting surveillance and recce missions in support of military operations;
- conducting clandestine diving operations;
- conducting hostage rescue operations in maritime environment;
- combating terrorism in a maritime environment.

Intext Questions 5.1

1. Explain the meaning of Special Forces.

   _____

2. Describe the different capabilities of Special Forces.

   _____

3. Name the first PARA (SF) special operations unit. When was it raised?

   _____

4. Who are the Black Cats? Why are they called so?

   _____

5. Describe the different responsibilities of Garuds.

   _____

6 Explain the roles of MARCOS.

What You Have Learnt

- Besides the existence of regular armed forces divisions, a separate set of personnel trained for specific purposes are employed to conduct covert operations behind enemy lines. These are known as Special Forces.
- After the Second World War many countries raised and employed special forces. India has raised special forces batallions and a Parachute Regiment, an Air Force Special Forces unit known as GARUD as well as a marine operations unit called MARCOS.
- Each of these forces undergo rigorous and specialized training and are capable of performing a wide range of tasks designed to reduce enemy capabilities while also preventing them from launching attacks.

Terminal Exercises

1. Describe the history of Indian Special Forces.
2. Explain the structure of PARA (SF).

Answers to Intext Questions

5.1

1. Special Forces are military units trained to conduct special operations. These include military activities conducted by specially designated, organized, trained, and equipped forces, manned with selected personnel, using unconventional tactics, techniques, and modes of employment.
2. Capabilities of Special Forces are :
   a. Reconnaissance and surveillance in hostile environments
   b. Offensive action
   c. Support to counter-insurgency through population engagement and support
   d. Counter-terrorism operations
   e. Sabotage and demolition
   f. Hostage rescue
3. The 9th Battalion, Parachute Regiment (Commando) was the first special operations unit. It was raised in July 1966.

Note

4. The National Security Guard (NSG) personnel are often referred to as Black Cats. This is because of the black dress and black cat insignia worn on their uniform.

5. GARUD primarily protects Indian Air Force installations from terrorist attacks including airfields and key assets in hostile environments by commando raids. They are also tasked to seal off weapons systems, fighter hangars and other major systems during intrusions and conflicts.

6. Conduct clandestine attack against enemy ships, offshore installations and other vital assets behind enemy lines.

- To support amphibious operations including pre-assault ops.
- To conduct unconventional warfare.
- Conduct of surveillance and recce missions in support of military operations.
- Conduct of clandestine diving operations.
- To conduct hostage rescue operations in maritime environment.
- Combating terrorism in a maritime environment.

6

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PARA MILITARY FORCES

A paramilitary force is a semi-militarized force whose organizational structure, tactics, training, subculture, and (often) function are similar to those of a professional military, but which is not included as part of a state's formal armed forces. Though paramilitary is not a military force, it is usually like military's light infantry force in terms of training, and organizational structure. Paramilitary force like B&F, which is for border guarding, comes under the Army during war and performs some functions of infantry.

Objectives

After studying this lesson, you will be able to:

- explain the meaning of paramilitary forces and
- describe the different types of paramilitary forces and their specific purposes.

6.1 Paramilitary Forces

Indian Paramilitary Forces refer to three organisations that assist the Indian Armed Forces closely and are led by officers of the Indian Army or Indian Navy. However, any law or rules of the Government have not defined them. Earlier, the term 'paramilitary' forces was used for eight forces:

1. Assam Rifles
2. Special Frontier Force
3. Indian Coast Guard
4. Central Reserve Police Force
5. Border Security Force
6. Indo-Tibetan Border Police
7. Central Industrial Security Force
8. Sashastra Seema Bal

However, from 2011, they have been regrouped into two classes whereby the later six are called Central Armed Police Forces (CAPF).

The first three are the current paramilitary forces of India - Assam Rifles (part of Home Ministry), Special Frontier Force (part of Cabinet Secretariat) and Indian Coast Guard (part of Ministry of Defence).

6.2 Assam Rifles (AR)

The Assam Rifles is the oldest paramilitary force of India. The unit can trace its lineage back to a paramilitary police force that was formed under the British in 1835 called Cachar Levy. Since then the Assam Rifles have undergone a number of changes in its name the Assam Frontier Police (1883), the Assam Military Police (1891) and Eastern Bengal and Assam Military Police (1913), before finally becoming the Assam Rifles in 1917.

Over the course of its history, the Assam Rifles and its predecessor units have served in a number of roles, conflicts and theatres including World War I where they served in Europe and the Middle East, and World War II where they served mainly in Burma. In the post World War II period the Assam Rifles has expanded greatly, as has its role.

There are currently 46 battalions of Assam Rifles with a sanctioned strength of 63,747 personnel. It is under the control of the Ministry of Home Affairs (MHA). The officers required for Assam Rifles is provided by Indian Army. Officers from the Indain Army are selected to serve a deputation duty in the Assam Rifles for a fixed number of years. They perform many roles including the provision of internal security under the control of the army through the conduct of counter insurgency and border security operations, provision of aid to the civil power in times of emergency, and the provision of communications, medical assistance and education in remote areas.

In times of war they can also be used as a combat force to secure rear areas if needed. Since 2002 it has been guarding the Indo-Myanmar barrier as per the government policy of **'one border-one force'.**

Assam Rifles ranks	Indian Army ranks
Director General (Army officer on deputation)	Lieutenant General
Inspector General (Army officer on deputation)	Major General
Deputy Inspector General (Army officer on deputation)	Brigadier
Commandant (Army Officer on deputation)	Colonel
Second in Command	Lieutenant Colonel
Deputy Commandant	Major
Assistant Commandant	Captain

6.2.1 Border Security Force (BSF)

The Border Security Force (BSF) is the primary border guarding force of India. It is one of the six Central Armed Police Forces of the Union of India. It was raised in the wake of the 1965 War on 1 December 1965, "for ensuring the security of the borders of India and for matters connected there with". It is a Central Armed Police Force charged with guarding India's land border on western front during peacetime and preventing transnational crime.

It is a Union Government Agency under the administrative control of Ministry of Home Affairs. The BSF has its own cadre of officers but head, designated as a Director-General (DG), since its raising, has been an officer from the Indian Police Service. It also takes officers from IPS on deputation.

The BSF has grown exponentially from a few battalions in 1965 to 186 battalions with a sanctioned strength of 2,57,363 personnel including an expanding air wing, marine wing, intelligence units. It currently stands as the world's largest border guarding force.

The BSF has played major role since the Indo-Pakistani War of 1971, including Operation Blue Star and Operation Black Thunder. It has also handled Counter Insurgency operations in Jammu and Kashmir.

6.2.2 Central Industrial Security Force (CISF)

The Central Industrial Security Force (CISF) was set up under an Act of the Parliament of India on 10 March 1969 with a strength of 2,800. CISF was subsequently made a para military force of the Republic of India by another Act of Parliament passed on 15 June 1983. Its current active strength is 144,418 personnel. In April 2017, the government raised the sanctioned strength from 145,000 to 180,000 personnel. This force is directly under the Union Ministry of Home Affairs and its headquarters is in New Delhi.

The CISF provides security cover to 300 industrial units, government infrastructure projects and facilities and establishments located all over India. Industrial sectors like atomic power plants, space installations, mints, oil fields and refineries, major ports, heavy engineering, steel plants, barrages, fertilliser units, airports and hydroelectric/ thermal power plants owned and controlled by Central Public Sector Undertakings (PSUs), and currency note presses producing Indian currency are protected by CISF. It, thereby, covers installations all over India straddling a variety of terrain and climatic conditions.

CISF also provides consultancy services to private industries as well as other organisations within the Indian government. The consulting wing has amongst its clients some of the renowned business houses and organisations of India including TISCO, Jamshedpur; SEBI Hqrs. Mumbai; Vidhana Sabha, Bangalore; Orissa Mining Co.,

Bhubaneswar; Telangana Assembly, Hyderabad; Bangalore Metropolitan Transport Corp.; HIL Kerala; IB Thermal plant, Odisa; IARI, Delhi; NBRI, Lucknow and Electronics City, Bangalore.

The scope of CISF's consulting practice includes security consulting and fire protection consulting.

CISF is a unique organisation in paramilitary forces for India, which works for sea ways, airways and some of the major installations in India. In CISF there are some reserved battalions which work with the state police to protect law and order. CISF plays a major role in Disaster Management, for Disaster Management course the personnel are trained at NISA, Hyderabad. Another unique thing which the CISF has is a Fire Wing which helps during fire accidents in Industries where CISF is on guard.

6.2.3 Central Reserve Police Force (CRPF)

The Central Reserve Police Force (CRPF) is the largest of India's Central Armed Police Forces. It functions under the aegis of Ministry of Home Affairs (MHA) of the Government of India. The CRPF's primary role lies in assisting the State/Union Territories in police operations to maintain law and order and counter insurgency. It came into existence as the Crown Representative's Police on 27 July 1939. After Indian Independence, it became the Central Reserve Police Force on enactment of the CRPF Act on 28 December 1949.

Besides law and order and counter-insurgency duties, the CRPF has played an increasingly large role in India's general elections. During all the Parliamentary elections the CRPF has played a major role in the security arrangements. Of late, CRPF contingents are also being deployed in UN missions.

With 239 battalions and various other establishments, the CRPF is considered India's largest paramilitary force and has a sanctioned strength of 313,678 personnel. Today, it is actively looking after the internal security of every part of India and has even operated abroad as part of IPKF and the United Nations peacekeeping missions. It is performing a variety of duties ranging from VIP security to election duties, from guarding of vital installations to the counter-Naxal operations.

The Rapid Action Force (RAF) - The RAF is a specialised 10 battalion wing of the Indian Central Reserve Police Force. It was formed in October 1992, to deal with communal riots and related civil unrest. The battalions are numbered from 99 to 108. RAF is a zero repose force which gets to the crisis situation within a minimal time, thus infuses an immediate sense of security and confidence amongst the general public.

Parliament Duty Group (PDG) - The PDG is an elite CRPF unit tasked to provide armed protection to Parliament House. It comprises 1,540 personnel drawn from

various units of CRPF. PDG members are trained in combating nuclear and bio-chemical attacks, rescue operations and behavioural management.

Commando Battalion for Resolute Action (CoBRA)

In 2008 a wing called Commando Battalion for Resolute Action (CoBRA) was added to the CRPF to counter the Naxalite movement in India. This specialised CRPF unit is one of the few units of the Central Armed Police Forces in the country who are specifically trained in counter insurgency warfare. This elite fighting unit has been trained to track, hunt and eliminate small Naxalite groups. There are currently 10 COBRA units. 10 CoBRA units that were raised between 2008-2011 have been trained, equipped and deployed in all LWE/ Insurgent affected areas of the states of Chhattisgarh, Bihar, Odisha, Jharkhand, Madhya Pradesh, Maharashtra, West Bengal, Andhra Pradesh, as well as Assam & Meghalaya. It is one of the best Central Armed Police in the country trained to survive, fight and win in the jungle.

CRPF Ranks	Police Ranks
Director General (Apex Scale of the Indian Police Service)	Director General of a State Police Force
Special Director General (HAG+ Scale of the Indian Police Service)	Special Director General
Additional Director General (HAG Scale of the Indian Police Service, also available to BSF cadre)	C.P, ADG
Inspector General (IG)	IG/ Joint CP
Deputy Inspector General (DIG)	DIG/ Additional CP
Commandant (CO)	SSP/DCP
Second In Command (2IC)	SP/DCP
Deputy Commandant (DC)	Addl. SP/Addl. DCP
Assistant Commandant (AC): Group A Gazetted Officer	DSP/ACP

Note

6.2.4 Indo Tibetan Border Police (ITBP)

ITBP was raised on 24 October 1962, under the CRPF Act, in the wake of the Sino-Indian War of 1962. The ITBP was intended for deployment along India's border with China's Tibet Autonomous Region.

In September 1996, the Parliament of India enacted the 'Indo-Tibetan Border Police Force Act, 1992' to "provide for the constitution and regulation" of the ITBP "for ensuring the security of the borders of India and for matters connected therewith". The first head of the ITBP, designated Inspector General, was Balbir Singh, a police officer previously belonging to the Intelligence Bureau. The ITBP, which started with 4 battalions, has, since restructuring in 1978 undergone expansion to a force of 56 battalions as of 2017 with a sanctioned strength of 89,432.

The ITBP is also trained in disaster management, and nuclear, biological and chemical disasters. ITBP personnel have been deployed abroad in UN peacekeeping missions in Bosnia and Herzegovina, Kosovo, Sierra Leone, Haiti, Western Sahara, Sudan, Afghanistan and elsewhere. Two battalions of ITBP are deputed to National Disaster Response Force.

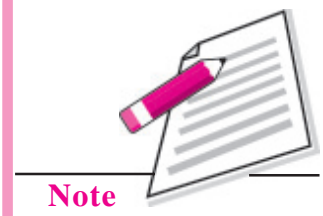
6.2.5 Sashastra Seema Bal (SSB)

SSB is one of India's Central Armed Police Forces. It is currently under the administrative control of the Ministry of Home Affairs (MHA), Government of India. Prior to 2001, the force was known as the Special Service Bureau (SSB). As of 2017, it has 76,337 active personnel in 67 battalions.

The previous role of the Special Service Bureau was to motivate and mobilise India's border population for national security during times of peace as well as war and to promote a sense of security and brotherhood among the population, in furtherance of national integration. Its present-day role consists of preventing cross-border crime and smuggling as well as other anti-national activities.

In pursuit of achieving this mandated task, the SSB has been conferred with certain powers under the Criminal Procedure Code of 1973, the Arms Act of 1959, the NDPS Act of 1985 and the Passport Act of 1967. The Government of India also contemplates conferring additional powers under the Customs Act of 1962.

These powers are to be exercised within a belt of 15 km in the states of Uttarakhand, Uttar Pradesh, Bihar, West Bengal, Sikkim, Assam and Arunachal Pradesh, running along the Indo-Nepal and Indo-Bhutan borders, as well as in any other area of SSB operation.



Note

Intext Questions 6.1

1. What is meant by Paramilitary Forces ? Explain.
2. Name India's oldest paramilitary force.
3. Describe the eight paramilitary forces.
4. Explain the meaning of CoBRA

6.2.6 Indian Coast Guard (ICG)

The Indian Coast Guard (ICG) protects India's maritime interests and enforces maritime law, with jurisdiction over the territorial waters of India, including its contiguous zone and exclusive economic zone. The Indian Coast Guard was formally established on 18 August 1978 by the Coast Guard Act, 1978 of the Parliament of India as an independent Armed force of India. It operates under the Ministry of Defence.

The Coast Guard works in close cooperation with the Indian Navy, the Department of Fisheries, the Department of Revenue (Customs) and the Central and State police forces. Missions of Indian Coast Guard include:

1. Safety and protection of artificial islands, offshore terminals and other installations
2. Protection and assistance to fishermen and mariners at sea
3. Preservation and protection of marine ecology and environment including pollution control
4. Assistance to the Department of Customs and other authorities in anti-smuggling operations
5. Law enforcement in territorial as well as international waters
6. Scientific data collection and support
7. National defence during hostilities

Its additional responsibilities cover:

1. Offshore Security Coordination Committee (OSCC)
2. National Maritime Search and Rescue Coordinating Authority (NMSARCA)
3. Lead Intelligence Agency (LIA)
4. Coastal Area Security

The Indian Coast Guard organisation is headed by the Director-General (DG ICG) who is located at Coast Guard Headquarters (CGHQ), New Delhi. At CGHQ, he is assisted by four Deputy Director-Generals of the rank of Inspector-General, and other senior officers heading various staff divisions. Director-General of Indian Coast Guard is equivalent to Vice Admiral of Indian Navy.

Note

ACTIVITY 6.1

Find out the name of the present Director General of the Indian Coast Guard and write 2 lines about his personal achievements.

The Indian Coast Guard operates five regions. Each region is headed by an officer of the rank of Inspector-General. Each of the regions is further divided into multiple districts, typically covering a coastal state or a union territory.

Indian Coast Guard Ranks	Indian Navy Ranks
Director-General	Vice Admiral
Special Director-General	Vice Admiral
Additional Director-General	Vice Admiral
Inspector-General	Rear Admiral
Deputy Inspector-General	Commodore
Commandant	Captain
Commandant (Junior Grade)	Commander
Deputy Commandant	Lt Commander
Assistant Commandant (Two year service)	Lieutenant
Assistant Commandant	Sub Lieutenant

6.2.7 Special Frontier Force (SFF)

The SFF is a paramilitary special force of India created on 14 November 1962. Its main goal originally was to conduct covert operations behind Chinese lines in the event of another Sino-Indian War. The force was established under the direct supervision of the Prime Minister, the unit under the operational command of IB and later R&AW, was designated the Special Frontier Force, and was primarily used for conducting clandestine intelligence gathering and commando operations along the Line of Actual Control with China.

SFF was raised with covert operations in mind, mainly along the Indo-China border, however SFF has been fielded by R&AW and the Indian government in various covert and overt operation theatres.

The SFF is also known as 'Establishment 22' or just '22' due to its first Inspector General, Major General Sujan Singh Uban (Retd.) of Indian Army, who used to be commander of 22 Mountain Regiment during World War II, a Military Cross holder

and a legendary figure in the British India Army. Singh commanded the 22nd Mountain Regiment during World War II in Europe and a Long Range Desert Group Squadron (LRDS) in North Africa.

Based in Chakrata, Uttarakhand, the force was put under the direct supervision of the Intelligence Bureau, and later, the Research and Analysis Wing, India's external intelligence agency.

Intext Questions 6.2

1. Describe the different tasks of Indian Coast Guard
2. What is meant by 'Establishment 22' ? Why is it called so ? Explain.

What You Have Learnt

- Indian paramilitary forces refer to the three organisation that assist the Indian Armed Forces. Earlier this term was used for eight forces - (i) Assam Rifles (ii) Special Frontier Force (iii) Indian Coast Guard (iv) Central Reserve Police Force CRPF (v) Border Security Force (BSF) (vi) Indo Tibetan Border Police (ITBP), Central Industrial Security Force (CISF) (viii) Sashastra Seema Bal (SSB). Nowadays the last six forces are called Central Armed Police Forces.
- Assam Rifles is the oldest paramilitary force of India. BSF guards the borders of the India. CISF provides security to industrial units, government infrastructure and projects. CRPF acts under the aegis of Ministry of Home Affairs and assists in maintaining law and order. ITBP was raised for deployment along the India's Border with China's Autonomous Region. SSB is under Ministry of Home Affairs and its target was to mobilise the India's border population for national security and promote a sense of security and brotherhood.
- Indian Coast Guard works in close cooperation with Navy and protects the artificial islands, fishermen and mariners at sea. Special Frontier Force SFF has the assignment to conduct covert operations behind Chinese Lines in event of another Sino-Indian war.

Terminal Exercises

1. Explain the functions and organisation of Central Industrial Security Force.
2. Explain the functions of the Border Security Force.
3. Explain the tasks of Central Reserve Police Force and provide its rank structure?

Note

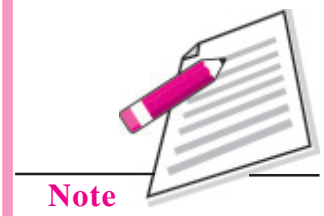
Answer to Intext Questions

6.1

1. A paramilitary is a semi-militarized force whose organizational structure, tactics, training, subculture, and (often) function are similar to those of a professional military, but which is not included as part of a state's formal armed forces.
2. The Assam Rifles is the oldest paramilitary force of India. It was raised in 1835.
3. The Eight paramilitary forces are :
   a. Assam Rifles
   b. Special Frontier Force
   c. Indian Coast Guard
   d. Central Reserve Police Force
   e. Border Security Force
   f. Indo-Tibetan Border Police
   g. Central Industrial Security Force
   h. Sashastra Seema Bal
4. Commando Battalion for Resolute Action (CoBRA)

6.2

1. Different tasks of Coastal Guard are :
   - Safety and protection of artificial islands, offshore terminals and other installations
   - Protection and assistance to fishermen and mariners at sea
   - Preservation and protection of marine ecology and environment including pollution control
   - Assistance to the Department of Customs and other authorities in anti-smuggling operations
   - Law enforcement in territorial as well as international waters
   - Scientific data collection and support
   - National defence during hostilities.
2. The SFF is also known as 'Establishment 22' or just '22' due to its first Inspector General, Major General Sujan Singh Uban (Retd.) of Indian Army, who used to be commander of 22 Mountain Regiment during World War II, a Military Cross holder and a legendary figure in the British India Army.



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GEO-STRATEGY

In previous lessons you have learnt about the evolution of military studies and its relevance to all of us. You must have also understood the structure and role played by Indian armed forces. In fact, the need for strong armed forces is an historical phenomenon when empires during ancient to medieval and modern times were compelled to maintain strong armed forces to achieve their goal of expanding their empires by capturing territories.

Today this is achieved through various strategies by increasing economic power and strengthening defence. Countries also enter into treaties and alliances with other countries as part of their strategy to achieve their national goals. The question here is how was this possible, then and now? What factors help to maintain such strong forces? These cannot be answered without understanding the importance of national power and strategies. What are India's natural resources and economic potential? And how do these help to strengthen the military?

It is important now to turn to understanding the meaning of geo-strategy and how India's geo-political objectives are realized.

Objectives

After studying this lesson, you will be able to:

- explain the meaning of geo-strategy;
- identify India's national power potential and
- describe the various economic activities of the country.

7.1 What is Geo-strategy?

As you can see, the term geo-strategy is combination of the words geography and strategy. The subject matter of geography deals with describing earth in terms of its physical features, distribution of population, land use, economic resource of the country etc. Strategy on the other hand is a calculated plan of action to achieve goals of the state.

Note

Geography: description of earth in terms of physical features, population distribution, land use and resource availability
Strategy: Calculated plan of action to achieve goals of the state.

This means that geographical factors are essential determinants of strategy. In this section you will learn how the combination of both geography and strategy has played a role in the development of defence strategies for India.

To understand, answering the question, what geographical factors are responsible in determining strategy is important. But before doing so it is important that you should know that there are many sub-fields of geography such as human geography, which deals with people and their community, economic geography dealing with location and distribution of economic activities and others. However, what we are concerned here is the strategic aspect of geography which is called geo-strategy.

This sub-field of geography deals with controlling and accessing geographical areas or territories that affect security and well-being of a state. There are several geographical factors that impact strategy such as Land, Demography and Natural Resources. Let us discuss some of them below.

7.1.1 Land

Land is defined in terms of physical geography or physiography. Possession of vast land or territory determines the power of a country. Every country has different land size, which are not uniformly distributed. Each country may have various land features such as hills, mountains, plains, deserts, rivers and forests. As far as India is concerned its physiography is divided into at least four aspects as follows:

a) Mountains in the North particularly the Great Himalayan range and other lesser mountains such as Aravalli mountains in Rajasthan, the Vindhya mountains, Western Ghats and the Eastern Ghats, the Nilgiris or Blue mountains and others.

b) Plains in the Northern India often called Indo-Gangetic plains.

c) The Plateau region of the South spreading from the Indo-Gangetic plain and covered by the Western Ghats and Eastern Ghats on both sides. The Deccan plateau is the largest plateau in the whole country; and finally,

d) The islands of India - the total coastline of India comprises of 7516 km. The coast of Gujarat in the Western part of India is the longest and the second longest is the coast line of Andhra Pradesh in the East. The Indian territorial limits include more than 200 islands including that of Andaman and Nicobar islands in the East of India and Lakshwadeep islands to the West of the country.

Note

7.1.2 Demography & Culture

India is one of the most densely populated countries in the world. With more than 1.2 billion people it is the second largest populated country in the world, the first being China. Its total population is more than that of USA and Russia put together and more than the total population of the entire African continent. What are the advantages of population from a military perspective?

- Firstly, they provide the manpower requirement of all three services of Indian military - the army, navy and air force along with the paramilitary forces. During emergency situations such manpower potential acts as strong reserves for the country.
- Secondly, they are also a source of economic activity of country for agricultural, manufacturing and industrial production.
- Thirdly, India has a large concentration of very young population. Nearly 42 percent of India's population is below the age of 15 years and only 12 percent of the population is aged 50 years and over. This is significant because young population adds to the work force of the country and contributes to the increase in economic development of the country.

The diversity of the country is another advantage for India because no other country in the world exhibits such variety of speech, written language, religious and social customs as India. The major religions of India are: Hinduism, Islam and Christianity. Besides Hindus, Muslims and Christians, we have in our population Sikhs, Jains and Buddhists. India is also home to large number of languages spoken with as many as 845 languages and dialects.

However 22 major languages are recognized by the constitution of India. These differences in religions, customs, languages and castes are because our people belong to different racial groups. These variations in land and demographic resources are used by humans in variety of ways to their advantage. Let us see what natural resources does the country possess? The next few sections will explain them.

Intext Questions 7.1

1. What is meant by geo-strategy?
2. Name any two sub-fields of geography.
3. Name the physiographical divisions of India.
4. State the length of India's coastline.
5. Describe any two advantages of demographic resources.

Note

7.2 Energy Resources and Natural Resources are major contributor to the economy

Energy and natural resources are vital for the economy of any country. India has several such energy resources like coal, petroleum, hydro-electricity and atomic power. Similarly, India is gifted with various natural resources like vast river systems for generating hydro-electricity, natural vegetation, forests and a wide variety of mineral resources all of which potentially contribute for the economic power of the country. A country which has the gift of natural resources can be a powerful country and capable of maintaing strong defence forces. Let us now learn about the major energy resources and potential of India.

7.2.1 Energy Resources

The major power resources of the country can be categorized into four: 1) coal 2) petroleum 3) hydro-electricity and 4) atomic power.

1) Coal is still the principle source of power in India. India is the ninth largest coal producing country in the world. The main coal deposits are in Bihar, West Bengal, Madhya Pradesh and Andhra Pradesh. Do you know the use of coal? It is used in power generation for the country and also in other industrial productions like steel industry, cement industry etc.

2) Petroleum is a very valuable source of energy which has no waste and each one of its by-products have other use i.e. petrol, fuel oil, diesel, lubricating oil, grease etc. Without the by-products of petroleum land, sea and air forces would be immobilized and no modern war can be fought. Presently, India produces 14.3 million tons of oil. Important oil producing areas in India are Assam (Digboi, Sibsagar, Bappapung, Hansapung, Naharkatia & Moran), Gujrat (Cambay, Ankleshwar, Kobal), Punjab (Adampur,Janauri),UP (Ujhani), Besides this, the off-shore oil is produced in Bombay High, Basin strictures in the Arabian Sea and North Bay of Bengal. New oil explorations are going on in the deltas of Krishna, Cauvery and Mahanadi. We are dependent on oil and are forced to import about 70% of our need from oil producing countries such as USA, Iran and UAE. This affects our economy.

3) Hydro-Electric Power. This power is continuous and cannot be exhausted. Hydro-electric dams and power stations are vulnerable to air attack which may initiate disasters like sudden sheet floods. If hydro-power is important then it is also important to conserve and protect our water resources. An important aspect of strategy is 'Environment Security'.

4) Atomic Power is both destructive and constructive power in the world, capable of bringing doom and progress in the most isolated port. India has the raw

material (Uranium, Thorium and Monozite) as well as the ability to develop atomic energy. Atomic energy plants are set up at Tarapore, Rana Pratap Sagar, Kota and Kalpakkam in Madras.

Fig 7.1

Fig 7.2

Fig 7.3

Source : Commons wikimedia.org

7.2.2 Natural Resources

- River systems: As you know water is the main source of life and India is bestowed with several perennial rivers. There are three major river systems in India and the Himalayan mountains are a good source of one of the greatest river systems called the Himalayan rivers. They are: the Indus river systems, the Ganges and the Brahmaputra river systems all of which run to more than 2000 km. Besides this there are other major rivers like Mahanadi, Godavari, Krishna, Cauvery and Narmada rivers. As you will see, the river systems provide good source of power generation for the country.

ACTIVITY 7.1

Find out the difference between perennial and seasonal rivers. Write the names of at least two perennial and one seasonal river in your state.

- **Natural Vegetation:** The character of vegetation of a place depends on its temperature, rainfall, interference by man and soil. The vegetation is tropical

Note

monsoon in character throughout India below a height of 900 meters. Owing to unequal amount of rainfall in various regions and varied conditions, India is rich in a number of species of plants which range from drought resisting thorny scrub to tropical wet evergreen forests.

The lofty Himalayas grow a large variety of vegetation, the zonal distribution of which varies from tropical to alpine types. India also has a variety of climatic regions. It has tropical rain forests found in the coastal plains and western Ghats and parts of North East India, tropical Savanna, Semi-arid, Tropical desert, humid sub-tropical climate with dry winters and mountainous climate in mountains above the range of 6,000 m such as the Himalayas and the Karakoram range of mountains.

- **Forests** are important resource of a country and play an important role in the country's economy. India has a very valuable asset in this varied wealth. It is considered that in a tropical climate, one third of the total area should be under forests for maintaining suitable climate conditions. The distribution of forests in our country is very uneven. This is largely because of irregular distribution of precipitation or rainfall. India's forest covers about 19% of the total geographical area. The distribution of forests in India is as follows:

  (a) Tropical Moist forest - 23.30%

  (b) Dry deciduous forest - 29.15%

  (c) Tropical Thorn forest - 5.25%

  (d) Tropical Wet Evergreen - 4.50%

  (e) Sub Tropical (Pune) - 3.75%

  (f) Moist Temp (Himalayan) - 2.70%

  (g) Wet Temperate - 1.60%

  (h) Others - 29.75%

7.2.3 Mineral Resources

Minerals form the basis of the industrial development of a country. India is fortunate to have rich deposits of some essential minerals. There are large reserves of coal, iron ore, mica, manganese ore, magnesite, bauxite and thorium. Coal is found in West Bengal, Orissa, Tamil Nadu, Madhya Pradesh and Chattisgarh. While these minerals are adequate and distributed throughout the country, some are inadequate.

Petroleum, phosphates, sulphur and potash fall considerably short of the requirement of the country. Hence, India is forced to depend on other countries for the supply of these minerals. The distribution of important mineral resources in India is as under:

Note

(a) Iron ore is located in Bihar, Orissa, A.P, M.P, Mysore and Tamil Nadu.

(b) Manganese is located in Orissa, Karnataka, used for smelting process and India is the largest producer in the world next to Russia and Ghana.

(c) Chromite is used for defence purposes and is located mainly in Mysore and Orissa

(d) Mica is mainly located in Bihar, Rajasthan & AP. India is the largest producer of mica in the world.

(e) Bauxite. Rich deposits of its ore found in Bihar, Gujarat, MP, Tamil Nadu & Orissa.

(f) Gypsum is used in Cement and fertilizer industries and it is mainly found in Rajasthan and Tamil Nadu.

g) Uranium resources are also found in places like Jharkhand, Rajasthan, Andhra Pradesh and Karnataka. These are also used for military purposes particularly in the production of nuclear weapons.

h) Thorium is also used for weapon production and is found in the coast of Kerala and in the rocks of Aravalli hills in Rajasthan.

i) Gold is another major resource found in Karnataka and Andhra Pradesh

ACTIVITY 7.2

Take an outline political map of India. Using the information given in section 7.2.3, points (a) to (i), mark the places on the map where different minerals are found. You can use different colours or symbols for different minerals.

Intext Questions 7.2

1. Describe the major energy resources of India.
2. Highlight the three major river systems of Himalayas.
3. Name the various mineral resources of India.

7.3 Geo Economic and Economic Power

The economic power is the capacity of a country to use its economic resources and assets in order to achieve self-sufficiency. 'Geo Economics is a combination of Geography and Economic activities of a nation that determines how it conducts trade with other nations.' This is achieved through a set of activities that can be broadly divided into three categories: agriculture, manufacturing and industrial development, and services. In fact, economic growth is very important for a nation as the capacity of a nation to fight a war depends upon its economic potential and technological superiority.

Note

Today, the nature of war is very different from that of ancient wars. Modern war is a total war in which the accepted rules of warfare, as fought during ancient times called 'Dharmayudh' are disregarded.

In modern wars the entire resources of a nation are devoted for the successful conduct. For example, one of the main reasons for the victory of allied powers during the last two World Wars was their superiority in resources, which ultimately determined war waging capability and resulted in victory. What does this mean to us? It means that resources should be utilized properly to make the country powerful. Here, in this section, we will study how the various natural resource potential of the country discussed above is utilized through the three major economic activities.

7.3.1 Agriculture

A nation that is self-sufficient in food and agriculture need not depend on other countries as it can support itself and feed the entire population. As far as India is concerned agriculture is the chief occupation of seventy percent of the population and forms the backbone of the country. Large number of people derive their livelihood by cultivating the soil. Agricultural activities in India are numerous and help feed the entire population of the country. India is self sufficient in rice and wheat production.

Besides rice and wheat several other important food crops are also produced such as jowar, pulses and maize. Other crops are also produced for commercial purposes such as sugarcane, cotton, groundnuts, tobacco, tea, jute etc. All of these earn considerable amount of foreign exchange for the country. It means that when these agricultural products are exported it brings foreign currency to the country, which can be used for enhancing defence capabilities of the country.

7.3.2 Industrial Resources

In recent years, India has made significant progress in industrial development. A variety of manufactured items are now produced in the country. Modern factories turning out all kinds of goods have been set up. Foreign collaborations have been made in establishing, particularly, metallurgical, engineering, electrical, chemical and pharmaceutical industries. This has laid the foundation of modern manufacturing industry in India.

Indian industries are manufacturing railways equipments, ship building, automobiles, aircraft, industrial machinery, electrical machinery and equipments. Chemical and paper industries have also made considerable progress after independence. As far as military is concerned, India is indigenously manufacturing missiles, tanks, helicopters, ships and other related weapon systems for use in defence. These are principally produced by several industries located throughout the country.

Note

Some of the other major industries of India are: cotton textiles, woolen textiles, jute industry, sugar industry, leather industry, iron & steel, handicrafts and engineering industries.

7.3.3 Services

Services can be understood as those that provide support services to the economic activities of the country. These include services such as tourism, education, health care, engineering, communications, transportation, information technology, finance and management. The services sector in India, today, occupies a predominant share of India's economic activity.

These different activities promote economic growth, which in turn help increase the economic and military power of the country by way of increasing the manufacturing of defence equipments for the country.

Intext Questions 7.3

1. Explain the term 'economic power'.
2. Name two major food crops and two cash crops produced in India.
3. How can economic activities be categorised ? Explain.
4. Write some example of Industrial resources.
5. How can industrial resources help in defence? Explain.
6. Name the various energy resources of India.
7. Give four examples of service industries in India.

What You Have Learnt

- Learning about geo-strategy is to learn about the link between geographical factors and strategy.
- With the help of geographical resources appropriate strategies are devised to achieve countries objectives and goals.
- Geographical resources do help in realizing the strategic needs of the country.
- The resources of India are plenty and varied. They help in the economic growth of the country and increase its military power potential in a big way.
- The maintenance of strong defence forces require strong economy and hence it is important to know the linkages between geographical factors and defence.
- Treaties and alliances are other dimensions of geo-strategy that countries enter into with other countries in order to maintain good relations and achieve peace

Note

and development. The good examples of this being India's role of in SAARC and ASEAN.

In the next lesson you will learn how geo-strategy helps in political decision making.

Terminal Exercises

1. How does studying geography help in understanding strategy? Explain.
2. Describe the various natural resources of India?
3. Explain how does industrial production help in defence of a country.

Answers to Intext Questions

7.1

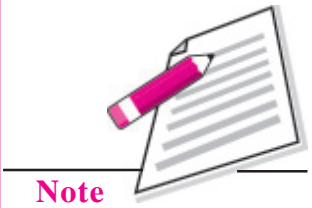
1. Geo-strategy deals with the strategy to use the physical features and natural resources of earth in a calculated plan of action in order to achieve national goals of the state.
2. Human Geography and Economic Geography
3. Mountains, Plains, Plateau regions and Islands of the South
4. 7516 km
5. Firstly, these provide manpower requirement of all three services of Indian Military - Army, Navy and Air force Secondly, these are a good source of economic activity

7.2

1. Coal, Petroleum, Hydro-electricity and Atomic Power
2. The Indus, Ganges and Brahmaputra
3. Iron ore, Chromium, Bauxite, Coal, Uranium, Thorium, Mica, Gypsum

7.3

1. Economic power is the capacity of a country to use its economic resources and assets in order to achieve self-sufficiency
2. Food Crops - Rice, Jowar, Pulses and Maize; Cash Crops - Cotton, Tea, Coffee, Sugar Cane, Tobacco
3. Agriculture, Industrial Resources and Services



Note

4. Manufacturing railway equipments, ship building, automobiles, aircraft, industrial machinery, electrical machinery and equipments, chemical and paper industries
5. It helps in the manufacturing of defence equipments such as missiles, tanks, ships, aircrafts and other defence related equipments
6. Hydro electricity, Atomic Power and Coal, Sunlight
7. Tourism, education, health care, engineering, communications, transportation, information technology, finance and management

Note

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8

GEO-POLITICS

International relations describe the type of relations a country has with other countries. The relationship between two countries is based on the level of interactions on subjects such as economy, military, law, environment etc. Two or more countries can have 'strategic relation', 'economic relation', 'political relation', 'bilateral (between two countries) multi lateral' (between two or more countries) relation etc.

The type of relation depends upon each others' mutual interests and benefits. In the region called South Asia India is centrally located and geo-politics determines bilateral relations in the region. Land, location, terrain and other geographical factors have influenced political decisions in a big way. You will learn that geographic factors impact the political decision-making. Understanding the location of India's neighbours and the meaning of soft and hard power of a nation will help to understand the need to have good relations with all countries.

Objectives

After studying this lesson you will be able to:

- explain the meaning of geo-politics;
- locate India's neighbours and identify the differences in power potential among nations;
- differentiate between treaties and alliances and derive the inter-se importance;
- describe the strategic areas of relations between India and its neighbours and
- describe the Panchsheel and non-alignment policy of India.

8.1 What is Geo-politics?

Before we proceed to discuss India's relations with neighbouring countries it is important to understand the meaning of the term geo-politics and international relations. You have learnt in the previous lesson about India's vast geographic and natural resources.

Note

The location of a country decides how it has to be prepared militarily to defend itself. For example, Great Britain used its location effectively to control the neighbouring and distant land by colonizing them through control of seas.

In the case of India too, geographical and natural resources have determined its power potential and how its power potential can be utilized to determine its relations with neighbouring and distant countries. In other words, as politics is about study of power, geopolitics refers to influences of geography on the relationships between nations.

8.2 India's Neighbours

India is centrally located in South Asia and is surrounded by smaller countries. We call this region the Indian sub-continent because of the enormous size of the region.

History reveals that the entire region was under the influence of India. For example, what we now call Pakistan and Bangladesh were once part of India. Similarly, the other countries of South Asian region such as Nepal, Bhutan, Sri Lanka and Maldives have at one point or other been under the influence of India. However, after the colonization by British, changes took place in the political and geographical features of the region.

The independence of India led to separation of Pakistan from India and Bangladesh was born in 1971. Today the South Asian region comprises eight countries. They are: Afghanistan, Bangladesh, Bhutan, Myanmar Nepal and Pakistan. Sri Lanka and Maldives shares maritime borders with India. China does share a big land boundary with India and hence it is India's northern neighbour but from a geo-political, historical and cultural point of view China is not included as part of South Asia.

India shares largest portion of its border with Bangladesh and shortest of it with Afghanistan. India shares a 699-km long border with Bhutan, 3323 Km (including LoC) with Pakistan. This border runs along the Indian states of Gujarat, Rajasthan, Punjab and Jammu & Kashmir. Located in the north of India, Tibet shares boundary with India's Jammu and Kashmir, Himachal Pradesh, Sikkim, Arunachal Pradesh and Uttarkhand.

8.2.1 India's Power

All countries have resources to be utilized as power. International relations are about how one country can influence the other to do what it wants. A country's power or Power is defined in terms of Hard power and Soft Power. Hard power is military power and soft power is the economy, culture etc.

Note

8.2.2 Soft Power

India has a wide range of soft power resources. The country is keen to wield its soft power. Soft power includes promotion of Yoga, Indian arts and crafts, music and culture in general. The Bollywood-made cinemas are popular in many continents. India's Cricket and Hockey teams are also famous. Its vast variety from music to football to cuisine and diversity has attracted the west. India's Ministry of External Affairs has a special focus to exercise Soft Power.

The Indian Council for Cultural Relations (ICCR) has been a key partner to strengthen external relations in various ways. Ministry of Tourism and other governmental partners are devoted to exercising India's soft power.

Soft power is the use of a country's cultural, social and economic influence over other countries in order to persuade them to do something without the use of hard power.

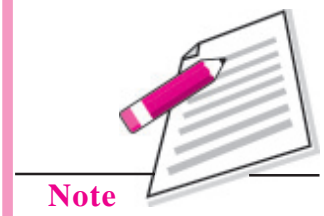
India has been show casing its social, political, and cultural assets abroad through various channels- directly and indirectly. In its neighbourhood, it has lent its support on various occasions to build friendly relations.

For example, soon after the massive earthquake in Nepal in 2015, India's Ministry of Home Affairs sent Indian Armed Forces and National Disaster Response Force. The operation was known as "Maitri". The Indian Air Force used Advanced Light Helicopters, Mi-17 and other aircrafts to rescue and distribute relief materials. India is the largest regional provider of humanitarian and reconstruction aid to Afghanistan.

Similarly, be it cyclone-hit Sri Lanka or Bangladesh, the Indian Government has used its soft and hard power to rescue people who were trapped in natural disasters and has sent large amounts of relief materials from time to time. The role of India in Sri Lanka is well known. During the time of Sri Lankan civil war India sent thousands of Peace Keeping Forces and constructed over 50,000 houses to give shelter to refugees.

Besides, the influence of Islam, Hinduism and Buddhism on its neighbours cannot be forgotten. Ethnic ties too strengthen India's Soft Power. The case of Tamil speaking Sri Lanka, Singapore or Bengali speaking Bangladesh is a good example of influence of language and culture. Philosophies of Mahatma Gandhi and other thinkers have also inspired many countries extremely.

In terms of Science and Technology India's achievements are huge as compared to its neighbours. India saw massive success in its Moon Mission. Indian Space Research Organisation (ISRO) is globally admired and has hundreds of successful missions to its credit. The Soft Power helps not only to shape Indian foreign policy but also other country's policy towards India.



Note

Intext Questions 8.1

1. What is meant by geo-politics?
2. Name the India's neighbouring countries.
3. Explain the term Soft Power.
4. Why was Operation Maitri carried out?

8.2.2 Hard Power

Hard power is the use of military and economic means to influence the behavior or interests of other nations or political entities.

Hard power is the use of military and economic means to influence and change the behaviour of other countries the way you want it

Hard power is often aggressive and is most effective when imposed by one political body upon a weaker nation. India has successfully won many battles and has launched many military operations. In Operation Vijay in 1961, India freed Goa, Daman and Diu from Portugal. Following the war with Pakistan in 1965, India captured around 740 square miles of territory against Pakistan gaining 210 square miles of territory.

In 1971 India supported Bangladesh's Liberation War. Indian Army took nearly 93,000 Pakistani soldiers as prisoners. India removed the illegal encroachment by Pakistan in the Siachen Glacier following Operation MEGHDOOT. Indian Army successfully brought back near normalcy in Naxalite hit areas in the country. Operation Cactus in 1988 restored the government rule in Maldives.

Intext Questions 8.2

1. Explain the meaning of Hard Power.
2. Write is the full form of DRDO.

8.3 Treaties and Alliances

Treaties and Alliances refer to the International relations between countries. It refers to the Foreign Policy to be followed in order to have good and beneficial relationship. India, as an independent sovereign country, continues to cooperate with its neighbours and distant countries. It is important to develop good neighbourly relations which are strengthened by entering into treaties and alliances. What are these and how important

Note

are these in bringing lasting peace and development? Let us learn more about treaties and alliances.

Treaties are written agreements entered into between independent states and legally binding on each other. They are referred to by various names such as international agreements, international conventions, international treaty, international pact and international accord etc., Basically there are two broad categories of treaties: bilateral and multilateral. Bilateral treaties are those that are signed between any two independent countries where as multilateral treaties are signed between two or more countries.

All treaties whether bilateral or multilateral are legally binding on the parties that have signed and accepted to be members to the treaty. However, alliances are different. They are formed for mutual benefit or support is for security considerations. Alliances are not legally binding.

Alliances are not for ever, they can change. Why are such bilateral and multilateral treaties entered into and for what reasons? You will learn this in the next section. Some examples of treaties are worth noting.

Examples of bilateral treaties are:

1) Indo - Sri Lanka Accord
2) Indus Water Treaty between India and Pakistan
3) India - Russia Friendship Treaty
4) India - U.S. Treaty on Nuclear Cooperation

Examples of Multilateral treaties are:

1) South Asian Association for Regional Cooperation (SAARC)
2) Association of Southeast Asian Nations (ASEAN)

World Organisations:

1) United Nations Organizations (UN)
2) World Trade Organizations (WTO)
3) World Bank (WB)

8.3.1 SAARC and ASEAN

Multilateral treaties through multilateral cooperation are strategies that countries adopt to co-exist and cooperate with other countries with the aim of development. One such attempt, the first of its kind in South Asian Region, is the formation of South Asian Association for Regional Cooperation (SAARC). The second was The Association of Southeast Asian Nations, or ASEAN. ASEAN is an association of all 10 countries

Note

of SE Asia. Let us study some important details of these two organisations.

8.3.2 SAARC

The South Asian Association for Regional Cooperation is an economic and geo-political organization formed on 8 December 1985 in Dhaka, the capital of Bangladesh. It presently comprises 8 countries as members. They are: Bangladesh, Bhutan, Maldives, Nepal, Pakistan, Sri Lanka and India. Afghanistan became the eighth member of SAARC in 2007.

The basic objective of SAARC is to develop the welfare of the people of South Asian region through cooperation in economic, cultural, technical, scientific and all other common aspects including security. The region is caught in poverty and security problems. Hence the idea of a multilateral cooperation at the regional level was initiated in order to solve such problems. Regular summit level meetings are held in various capital cities of member countries on rotation basis.

India has played a central role in SAARC. As you will learn in the next lesson, all countries of South Asia have been under the religious, cultural, economic, political influence of India. Hence India's role in this organization is important. However, even if these are welcome steps to cooperate to solve problems at the multilateral level you should understand that not all times they are successful. Sometimes political and security issues hinder the cooperation. For example, since partition, the hostility that Pakistan has shown towards India continues to be a hurdle in fully realizing the potential for better economic cooperation and development among member countries.

8.3.3 ASEAN

Southeast Asia is another close neighbourhood of India, which has also seen the religious, cultural and political influence of India for several centuries. Realizing the importance of this region and the need to strengthen economic power, India has now evolved a strategy to build close ties with countries of this region.

The policy originally was called 'look east policy' which, under the present government, has become "Act East Policy". The regional organization called the Association of Southeast Asian Nations (ASEAN) was formed on 8 August 1967 in Bangkok, Thailand. The founding members are Malaysia, Singapore, Indonesia, Thailand and Philippines. Today it includes all 10 countries of the region: Laos, Cambodia, Myanmar, Vietnam and Brunei.

The aim of this regional organization is to promote economic growth and provide regional peace and stability through cooperation. Although India is not a member of ASEAN, it has been a summit level partner since 2002 and now a strategic partner of ASEAN since 2012. India has also been building political, economic, and security

Note

cooperation with ASEAN countries and has set up a separate diplomatic mission for ASEAN.

Intext Questions 8.3

1. Explain the term 'treaties'.
2. Provide two examples each of bilateral and multilateral treaties.
3. Name the members of SAARC and ASEAN.

8.4 Issues Between India and its Neighbours

India follows a policy of friendly cooperation with its neighbours. However, this has been difficult to achieve. There have been several hindrances in the past decades that have hampered bilateral ties. Here, in this section, you will learn how this has happened in three broad areas viz: political and diplomatic issues, and defence and economic issues. Political and diplomatic cooperation with neighbouring countries have been generally cordial with most of the neighbouring countries. However, as with the case of any two individuals, differences do crop up between countries. Let us examine each country and understand the issues.

8.4.1 Bangladesh

It was in 1971 that Bangladesh got its independence from West Pakistan with the help of India's military intervention. Thereafter relations have been cordial on all fronts as we share common cultural and language bonds. However, there are certain issues that have also affected thirelations. These are:

- **Illegal migration from Bangladesh:** The migrants have become an economic, political and security problem for India. Economically they have to be supported with food, shelter and medicines and security wise there is a possibility of these people turning to anti-India activities.
- **Porous Border:** A porous border means that the border is not fenced or manned. India shares the longest boundary with Bangladesh, most of which are riverine plains. Hence it has been difficult to fence them and easy for illegal smuggling to take place. Moreover, the border between India and Bangladesh is porous leading to smuggling of goods including gold and other goods that affect security.
- **Presence of terrorist** outfits like Harkat-ul-Jihad-al-Islami, Jamat-e-Islam are active in those bordering areas. Drug dealers are increasingly using Bangladesh as a transit point. They smuggle heroin and opium to India from Burma and other countries through Bangladesh.

Note

- Fake Indian currency notes are also transferred in large quantities along the border.
- Sharing of Teesta river water that flows through Sikkim and West Bengal and finally into Bangladesh is still an unresolved issue.

8.4.2 Pakistan

We share common historical, cultural, and linguistic ties with the people of Pakistan. Yet Relations with Pakistan have not been cordial and smooth. Several issues have hindered good neighbourly progress. Some of them are:

- **Kashmir:** This has been the most delicate issue between the two countries. While there was a political agreement with the then ruler of Kashmir Maharaja Hari Singh who signed the instrument of accession with India but was not accepted by Pakistan which sent its invaders to destabilize and take the region by force. The timely intervention of our armed forces prevented the hostile take over. Due to certain political actions at the time, some parts of Kashmir continue to be occupied by Pakistan, and remain under its control till today. Those areas are called Pakistan Occupied Kashmir or POK. Since then India and Pakistan have fought three major wars and one minor war at Kargil in 1999.
- **Terrorism:** This is another major political issue faced between the two countries. Having failed in the hostile take over during 1947-48, Pakistan has used terrorism as a instrument of state policy against India. Terrorists started infiltrating from Pakistan and started terror attacks on armed forces and government organisations. Separatist organisations were formed in Kashmir valley who started helping the terrorists. Such an action by a country against another is called proxy war. This is a major issue of concern affecting bilateral, political and economic relationships between the two countries.
- Proxy wars: Pakistan has been waging proxy war with India trying to destabilize India by way of supporting anti-Indian outfits in the country particularly in Kashmir region. This has led to strained relationship both politically and militarily.

DO YOU KNOW

Proxy Wars means war instigated by a country without directly involving its military and supporting hostile mercenaries, terrorists with weapons, training and money.

Note

8.4.3 Myanmar

India shares 1643 km of its land boundary and maritime boundary in the Bay of Bengal. A large number of Indians have been living in the country even before British colonial rule in Myanmar, which was earlier called Burma. The presence of Indians in Myanmar has helped strengthen bilateral relations. Trade between the two countries has flourished. Myanmar is the gateway to South East Asia. Myanmar is also important because its help is needed to fight insurgency in Northeast India. Issues affecting ties are:

- The borders are not fenced and hence insurgents in both Myanmar and in Northeast India have become serious security issue. Within India, armed groups based in Nagaland, Manipur and Mizoram use Myanmar as safe haven to operate.
- The problem of illegal migration - Muslim Rohingyas in Myanmar have illegally migrated to India to escape the violence against them in their country.

8.4.4 Nepal

With Nepal too, India shares a common land boundary and has signed a friendship treaty in 1950. Nepal is a Hindu Kingdom and has seen a steady growth in bilateral relations in all spheres. Nepal is located in a strategically important area in the Himalayan region bordering Tibet and hence demanded closer attention and ties for India. However, there are some issues that have affected progress.

- Nepal is a land locked country and the access to sea ports are through India. This some times creates frictions.
- Issue of Madeshi population is again a cause of discord between the two countries.
- Issue of human trafficking. Thousands of Nepalese in India are believed to have been trafficked to India illegally.

DO YOU KNOW

Human Trafficking means the practice of illegally transporting people from one country to another for forced labor or exploitation

8.4.5 Sri Lanka

India is the only maritime neighbour for Sri Lanka and so generally speaking, there have been good neighbourly relations with the country. India helped Sri Lanka in solving the internal security problem from LTTE. It sent its peacekeeping force to maintain stability and peace in the country. India has also been an economic partner

Note

for Sri Lanka supplying goods and services. It has signed economic and free trade agreements and bilateral trade ties have increased. In the area of security and defence too India has helped Sri Lanka in supplying some military equipment and provided training. However, there are issues that have also affected progress. These are:

- The issue of Tamil Nadu fishermen crossing Palk straits and entering waters of Sri Lanka for fishing is a daily problem.
- Kachchativu island located between India and Sri Lanka was given to Sri Lanka by India. It has become an area of dispute.
- Chinese naval base in Sri Lanka and construction of port facilities by China. This has strategic and security concerns because Chinese war ships can freely come to the port.

8.4.6 Maldives

Maldives is located in a geo-strategically important area in the Indian Ocean. It is the smallest country in South Asian region. Similar to other neighbouring countries, India-Maldives relations have also been generally cordial. India has been a development partner for Maldives and has assisted the country in all major areas particularly in capacity building, trade and commerce, etc. India has also helped with the security needs of Maldives and has signed defence cooperation agreements. However, the relations deteriorated in view of its close ties with China at the cost of India's security concerns. Maldives had signed its first ever Free Trade Area agreement with China. But with the change in government in Maldives, its 'India First Policy' is back on trade.

Intext Questions 8.4

1. What is meant by porous border?
2. Name the ruler of Kashmir during the time of independence.
3. Explain a Proxy War.
4. Where is Maldives located.
5. Mention any two problems that India faces with Sri Lanka.
6. What is meant by human trafficking? Explain.

8.5 Panchsheel and Non-alignment Policy of India: An Overview

Panchsheel is also called as the five virtues or what is popularly known as the "Five Principles of Peaceful Co-existence". This became the guiding principle in India's international relations as well as in the relations between other countries. In fact, this was independent India's very first foreign policy initiative towards China when both

Note

countries signed an agreement on Trade and Intercourse between the Tibet Autonomous region and India on 29th April 1954.

The preamble of the agreement stated the five principles as follows:

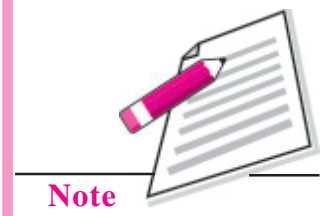
1. Mutual respect for each other's territorial integrity and sovereignty
2. Mutual non-aggression
3. Mutual non-interference
4. Equality and mutual benefit and
5. Peaceful Co-existence

8.5.1 Effect of five principles (Panchsheel)

The five principles not only served as a policy between India - China relations but subsequently extended as a policy framework in the relations with other countries also. In due course of time, the principles were incorporated into the movement that came to be called "Non-aligned Movement" or NAM, which came into existence in 1961 when colonial rule collapsed and several Asian and African countries gained independence. The movement was spearheaded by India along with Egypt, Ghana, Yugoslavia and Indonesia who became the founding fathers of NAM. The five principles served as an important policy for the movement aiming to bring about world peace and security.

What You Have Learnt

- Geopoletics refers to influences of Geography on the relationships between nations. India is centrally located and is surrounded by countries - Nepal, Bhutan, Sri Lanka, Pakistan, Bangladesh, Maldives, Myanmar.
- Hard power is military power and soft power is the economy and culture etc. India has a wide range of soft power resources - like yoga, music, classical dances, cricket, hockey and different dishes. Incase of hand power our army, airforce and navy has no match in the surrounding countries.
- Treaties and Alliances refer to the international relations between countries. India is also under obligation of many atreaties - Indo-Sri Lanka accord, India-Russia friendship treaty, India-Us treaty on Nuclear cooperation. Although India gives priority to its good relations with the neighbouring countries but different problems do affect these relation. Pakistan is an headache for India with problems of Kashmir, terrorism and different wars. Even in Sri Lanka the problems of Indian Tamils have affected the good relations.
- India has following the principles of Panchsheel and Non-alignment.



Note

- Each of them is different and needed to be addressed with different political, diplomatic and military strategy.

Terminal Exercises

1. How does geo-politics influence decision making?
2. What is meant by the term soft and hard power?
3. Name the neighbouring countries of India.
4. State the principles of Panchsheel.

Answers to Intext Questions

8.1

1. Geopolitics is nothing but influences of geography on relationships between nations
2. Afghanistan, Bangladesh, Bhutan, Myanmar Nepal, Pakistan, Sri Lanka and Maldives
3. Soft power is promotion of India's cultural values and tradition and includes promotion of Yoga, Indian arts and crafts, music and culture in general.
4. As a friendly gesture by India it provided massive humanitarian assistance during massive earthquake in Nepal in 2015.

8.2

1. Use of military and economic means to influence the behavior or interests of other nations or political entities.
2. Defence Research and Development Organization

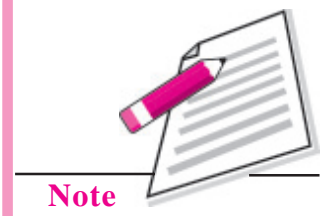
8.3

1. Treaties are written agreements entered into between independent states and legally binding on each other.
2. Bilateral treaty examples are Indo - Sri Lanka Accord and Indus Water Treaty between India and Pakistan and example of multilateral treaty are South Asian Association for Regional Cooperation (SAARC) and Association of Southeast Asian Nations (ASEAN).
3. SAARC Members are: Bangladesh, Bhutan, Maldives, Nepal, Pakistan, Sri Lanka, India and Afghanistan. ASEAN members are: Malaysia, Singapore, Indonesia, Thailand, Philippines, Laos, Cambodia, Myanmar, Vietnam and Brunei.

Note

8.4

1. Borders between countries that are not fenced or manned are called porous borders.
2. Maharaja Hari Singh.
3. War instigated by a country without directly involving its military and supporting hostile mercenaries, terrorists with weapons, training and money.
4. Geo-strategically important area in the Indian Ocean.
5. Issue of Tamil Nadu fishermen crossing Palk straits and ownership of Kachativu islands.
6. Practice of illegally transporting people from one country to another for forced labor or exploitation



9

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MARITIME SECURITY

Water is the major source of life. Even though water occupies a major portion of earth's surface, it is the geographical location and resources in it that makes them important. We can categorise this water as oceans and seas. Ocean is a large water body of saline water where as seas are large body of water which may or may not be connected. Most of the seas are fully or partially enclosed by land.

Till date we have explored only five percentage of total area covered by oceans. And today, the economic growth of countries depend on oceans because it is through these large water bodies that trade is conducted and import and export of products, oil, etc., are shipped.

Hence securing such activity is called maritime security. In view of its importance nation states give lot of importance to securing the sea lanes of communication to protect their economy, borders, protect trade routes and also to show their strength.

Objectives

After studying this lesson you will be able to:

- explain the different aspects of maritime security of our country;
- explain and assess the importance of maritime security to India and
- identify the various agencies associated with maritime security of India.

9.1 Maritime Security

Maritime security involves protecting the nation's sovereignty from threats arising from the oceans and seas. It includes protecting coastal areas, safeguarding the available ocean resources such as fish, offshore oil and gas wells, port facilities, etc. It also means maintaining freedom at sea for movement of our ships and facilitating and protecting trade. Following are the elements of maritime security:

- International and national peace and security
- Protection of sea lanes of communication

Note

- Sovereignty, territorial integrity and political independence
- Protection from crime at sea
- Access and security to the resources at sea
- Security of seafarers and fishermen
- Environmental protection.

Just as we have threats on our land borders, we have threats in the oceans and seas. These are:-

Maritime Threats

- Illegal maritime arrivals/terrorists.
- Illegal exploitation of natural resources.
- Illegal activity in protected areas.
- Marine pollution.
- Prohibited imports and exports (Smuggling).
- Compromise to biosecurity.
- Piracy, robbery or violence at sea.
- Maritime terrorism.

Intext Questions 9.1

1. Explain the meaning of maritime security.
2. Name any three maritime threats.
3. Name any three elements of maritime security.

9.1.1 Maritime Zones

States that have access to the sea are called coastal state. India is a peninsula because it has huge water ways surrounding its land on three sides. Such states have sovereign rights to use all its surrounding water ways for various purposes. Essentially the purposes are:

- To explore, exploit, and manage its natural resource in the sea bed for economic purposes.
- Establish rights over use of artificial islands and installations and structures for marine scientific research.

Note

The maritime zone recognized under international law includes internal waters, territorial sea, the contiguous zone, the exclusive economic zone, the continental shelf and the high seas. Let us see them briefly here.

- **Internal water:** Internal waters are the waters on the landward side of the baseline from which the distance of the territorial sea is measured. States have full sovereignty over its internal waters. Internal waters are considered as a part of land territory.
- **Territorial Sea:** States can claim twelve nautical miles from its baseline. The coastal state has the authority over the territorial sea, the air space above it, and the seabed and subsoil beneath it.
- **Contiguous Zone:** Each coastal state can claim a contiguous or adjacent zone. It is beyond the territorial sea and extends seaward up to 24 nm (nautical miles) from its baseline. In this zone coastal states can exercise customs, fiscal, immigration or sanitary laws.

DO YOU KNOW

Nautical mile is a unit of measurement at sea or air. One Nautical Mile is equal to 1852 metres or 1.852 km

- **Exclusive Economic Zone:** Coastal states can claim an Exclusive Economic Zone (EEZ) beyond and adjacent to its territorial sea that extends up to 200nm towards sea from its baseline or out to a maritime boundary with another coastal state. You can find the graphical representation of maritime zone below.
- **High Seas:** The High Seas lie beyond 200 nautical miles from shore and are open and freely available to all countries. On the High Seas, no state can act or interfere with others using the seas. The law gives freedom of activity in six areas: Navigation, over flight, laying of cables and pipelines, artificial islands and installations, fishing, marine scientific research.

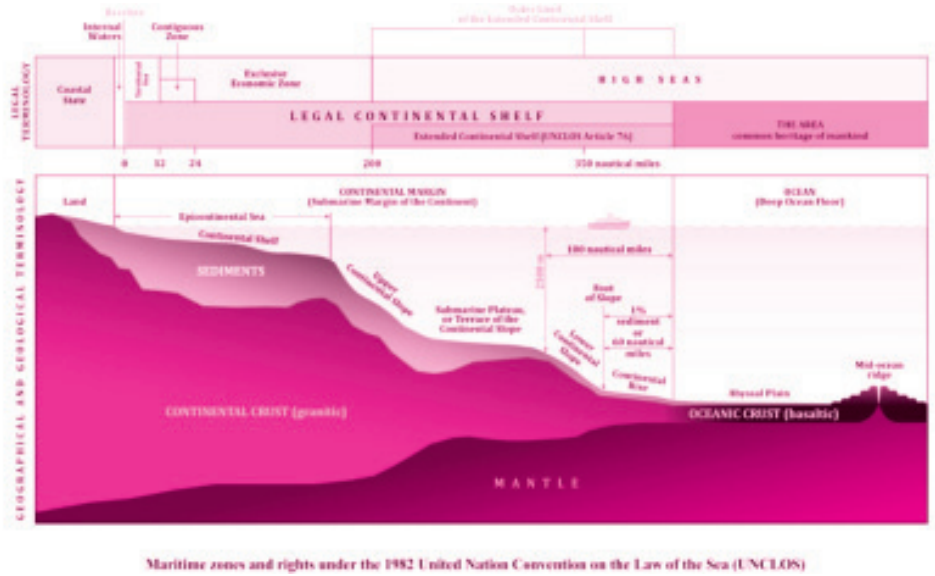


Fig 9.1 - Maritime Zones- Geographical Representation

Intext Questions 9.1

1. Explain the law of sea.
2. Explain the meaning of the maritime zones.
3. Describe the rights of a coastal state.
4. Explain the 'high seas'.

9.2 Importance of Maritime Security for India

Maritime trade occupies an important place in India's economy and energy security. Most of India's trade and energy supply pass through the Indian Ocean Region (IOR). It is estimated that most of the India's trade is done through the ocean. Hence securing the maritime area is non-negotiable. Apart from this reason, the geography of India also makes maritime security an important concern for Indian policy makers.

India has a coastline of 7,517 kms. Out of this 5,422 kms are with main land. Andaman and Nicobar have a coastline of 1962 kms and Lakshadweep has 132 kms of coastline. This vast coast line presents numerous security challenges like piracy, illegal landing of arms and explosives, infiltration, use of sea and off shore islands for criminal activities, drug and human trafficking and smuggling. Absence of physical barriers on the coast and presence of vital industries like port and important defence installations like RADARs and nuclear reactors enhances the risk and the need to protect its maritime region.

Note

Besides, there is the need to protect the resources of the ocean in a sustainable manner. The traded goods and services are brought to land through the use of ports that are located in different parts of the country all along the coastline. Let us learn about them.

9.2.1 Ports in India

As mentioned above a big part of India's trade is conducted through oceans. India is planning to build 14 coastal economic zones. At present there are 12 major ports and 200 minor and intermediate ports in India. The 12 major ports of India are spread throughout the western and eastern coasts of India. These points are -

- Chennai
- Ennore
- JNPT
- Kochi
- Kolkata
- Mangaluru
- Mormugao
- Mumbai
- Paradip
- Tutucorin
- Vishakapattanam

ACTIVITY 9.1

Locate all the major parts mentioned in section 9.4 on a blank political map of India.

DO YOU KNOW

Sagar Mala

Sagaramala is an initiative by government of India to develop and modernize ports and coastal economic zones. It also includes costal community developmental programmes through skill development and livelyhood generation activities like fisheries development and coastal tourism.

Below is the list of 200 more notified ports in different parts of India.

No.	State	Number of Ports
1.	Maharastra	48
2.	Gujarat	42

Note

3.	Kerala	17
4.	Tamilnadu	15
5.	Karnataka	10
6.	Odidsha	13
7.	Andra Pradesh	12
8.	Goa	5
9.	Lakshadweep	10
10.	Daman and Diu	2
11.	Pondichery	2
12.	Andaman and Nicobar	23

Blue Economy

Oceans not only help us in transportation of goods and services but also enable us to use the vast resources such as oil and natural gas and other minerals besides fisheries. Around 38 million people in the world depend on the fisheries from the oceans.

Hence, oceans provide enormous economic opportunities for the people as well. Blue economy is the sustainable use of resources of the oceans in a way to help the coastal community people in their economic and social development.

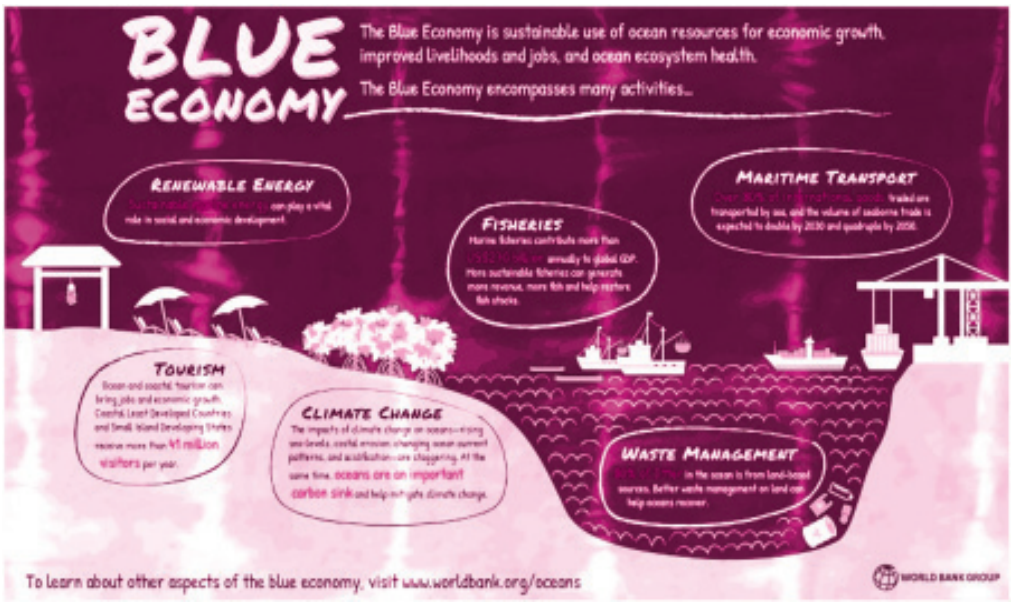
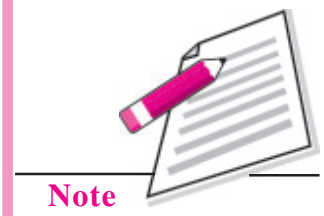

BLUE ECONOMY
The Blue Economy is sustainable use of ocean resources for economic growth, improved livelihoods and jobs, and ocean ecosystem health.
The Blue Economy encompasses many activities...
RENEWABLE ENERGY
FISHERIES
MARITIME TRANSPORT
TOURISM
CLIMATE CHANGE
WASTE MANAGEMENT
To learn about other aspects of the blue economy, visit www.worldbank.org/oceans
WORLD BANK GROUP

Fig 9.2 - Diagramatic Representation



Note

Intext Questions 9.3

1. Why is maritime security important for India? Explain.
2. Explain the term 'blue economy'.
3. Name any five major ports in India.
4. Explain the term Sagarmala.

9.2.2 Strategic Importance of Maritime Boundaries

The Indian Ocean Region (IOR) is of immense strategic importance to India. Most of the country's oil and gas is imported through the sea. There is continuous increase in trade with the countries that surround the Indian Ocean region. Besides, the sea lanes, the Indian Ocean is considered as the most strategically important in the world because more than 80 % of the world's seaborne oil trade goes through the Indian Ocean choke points - 40 % passes through the Strait of Hormuz, 35 % through the Strait of Malacca and 8 % through the Bab el-Mandab Strait.

DO YOU KNOW

A chokepoint refers to a point of natural congestion along two wider and important navigable passages. Maritime choke points are naturally narrow channels of shipping having high traffic because of their strategic locations and these can be blocked by the navy.

More than half the world's armed conflicts are presently located in the Indian Ocean region. Also, terrorism and piracy add to the tensions. Apart from these competition between China and India to get supremacy in this region makes this region strategically important.

Some of the major choke points in the Indian ocean region are -

- Strait of Horminz
- Malacca and Singapore Straits
- Sunda Strait
- Lombok Strait
- Cape of Good Hope
- Mozambique Channel
- Ombai and Wetar Straits
- Bab-el-Mandeb

Note

Intext Questions 9.4

1. What is a maritime chokepoint?
2. Name any two major choke points in the Indian ocean region.

9.3 Agencies and Institutions of Maritime Security

In India, maritime security is not only responsibility of a single ministry or department. It is a combined effort of several ministries departments and agencies. There are four ministries in India which take care of the maritime issues. They are:

1. Ministry of Defence
2. Ministry of Home affairs
3. Ministry of Fisheries and
4. Ministry of Shipping
5. Other main stake holders are:
   - Ministry of External Affairs
   - Ministry of Communication and Information Technology

9.3.1 Forces for Sea Borders Protection

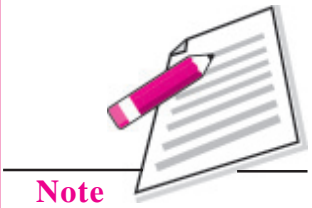
Forces responsible for protection of our sea borders are The Indian Coast Guard, Border Security Force (Rann of Kutch is Protected by BSF) and Central Industrial Security Force (CISF). CISF looks after the security of the major ports. State governments including island territories of India which have coastal regions employ the following agencies:

1) Forces

- State marine police
- State marine home guards (e.g. Tamil Nadu)
- State coastal security committees
- District coastal security committees

2) Intelligence agencies

- National Technical Research Organisation.
- Research and Analysis Wing
- Intelligence Bureau
- Narcotics control bureau



Note

- Directorate of revenue intelligence
- Defence intelligence agency
- Directorate of navy intelligence

3) **Research and Development organizations**

- Indian Space Research Organisation
- Defence Research & Development Organisation
- National Centre of Excellence in Technology for Internal Security (NCETIS), IIT Bombay

4) Land Ports Authority of India (LPAI), Ministry of Home Affairs

5) Central Board of Excise & Customs, Ministry of Finance

6) National Committee for Strengthening Maritime and Coastal Security (NCSMCS)

7) National Marine Police Training Institute (MPTI) (Planning)

8) Central Marine Police Force (Planning)

9.3.2 Indian Coast Guard

Indian Coast Guard (ICG) is responsible for the security of coastal and territorial waters. It was formally established on 18th of August 1978 by the Coast Guard Act, 1978. Do you remember Exclusive Economic Zone? The ICG is responsible for maritime surveillance across India's 2 million sq.kms of Exclusive Economic Zone. ICG is also responsible for the overall coordination between central and state agencies in the matters relating to coastal security.

According to the 1976 Indian Maritime Zone Act the maritime zones of India are divided into 5 coastal regions which have their headquarters as follows:.

No:	Regions	Headquarters
1	North West	Gandhinagar
2	West	Mumbai
3	East	Chennai
4	North East	Kolkata
5	Andaman and Nicobar	Port Blair

Note

These regions are further divided into 12 coast guard districts - one each in the nine coastal states, two in Andaman and Nicobar Islands, and one in Kavaratti in Lakshadweep and Minicoy Islands.

9.3.3 Indian Navy

Another main agency which is looking after the maritime security is the Indian Navy. The new maritime strategy of Indian navy is based on the concept of ensuring secure sea lanes of communication. Indian Maritime Security Strategy follows two key aspects. First, the rise in sources, types and intensity of threats. Second, in order to provide 'freedom to use the seas' for India's national interests, it is necessary to ensure that the seas remain secure.

9.3.4 International Ship and Port Facility Security Code (ISPS)

The international ship and port facility security code (ISPS) is a comprehensive set of guidelines and regulations established for the security of ships and port facilities.

International maritime Organisation

IMO is the specialized agency of UN. It is responsible for setting up global standard for security, safety and environmental performance of international shipping.

It is developed by International Maritime Organisation. Post 9/11 they brought strict regulations in the area of maritime security and safety. The code is constituted in the International Convention for Safety of Life at Sea (SOLAS). There are 148 signatories. The purpose of this code is to establish a standardised frame work across international ports and ships. This then allows governments to efficiently evaluate risks and offset threats to security level and undertake the security measure prescribed by the code. India implemented this code in 2004 and 10 minor ports are working under this code.

Intext Questions 9.5

1. What is IMO and ISPS?
2. Name the ministries and agencies working for the maritime security in India.
3. Write a brief description of the India Coast Guard.

What You Have Learnt

- Maritime is very important for a country like India, which is surrounded by water on three sides.

Note

- From a strategic point of view India witnessed two major terrorist attacks - the Mumbai blast and the Mumbai terror attack through sea routes.
- Besides, India is also facing challenges from China through its increasing naval activity in the Indian Ocean and establishment of naval basis at awadar in Pakistan etc.
- Piracy, terrorism and drug-trafficking are other major threats that arise from the seas.
- Economically, the Indian Ocean is of immense strategic value as a large portion of India's trade is conducted through the Indian Ocean. Hence it is vital to secure the sea lanes of communication and protect the coastal regions, ports, industries and other facilities.
- For this purpose, India has established institutions and agencies such as Coast Guard, Indian Navy and other military agencies that provide constant support and security.

Terminal Exercises

1. Why is maritime security important? Explain.
2. Highlight the importance of blue economy.
3. Describe the role of Coast Guard and Indian Navy in maritime security.

Answers to Intext Questions

9.1

1. Maritime security involves protecting the nation's sovereignty from threats arising from the oceans and seas
2. Illegal maritime arrivals; Illegal exploitation of natural resources; Illegal activity in protected areas and Marine pollution.
3. International and national peace and security
   - Protection of sea lanes of communication
   - Sovereignty, territorial integrity and political independence
   - Protection from crime at sea
   - What are the elements of maritime security? Name any three.

9.2

1. Laws that regulate the use of sea for transshipment and other purposes by countries of the world.

Note

2. Includes internal waters, territorial sea, the contiguous zone, the exclusive economic zone, the continental shelf and the high seas.
3. Sovereign rights to use all its surrounding water ways for various purposes for the purpose of exploring and exploiting its natural resource in the sea bed for economic purposes and to establish rights over use of artificial islands and installations and structures for marine scientific research.
4. The High Seas lie beyond 200 nautical miles from shore and are open and freely available to all countries. On the High Seas, no state can act or interfere with others using the seas.

9.3

1. Because an estimated 95 % of India's trade is conducted through oceans and hence securing the maritime is important for India.Why is maritime security important for India?
2. Blue economy is sustainable use of resources of the oceans in a way to help the coastal community people in their economic and social development.
3. There are 12 major ports in India. Some of them are: Kolkata, Paradip, Vishakapattanam, Ennore, Chennai, Tutucorin.
4. Sagaramala is an initiative by government of India to develop and modernize ports and coastal economic zones. It also includes costal community developmental programmes through skill development and lively hood generation activities like fisheries development and coastal tourism.

9.4

1. A chokepoint refers to a point of natural congestion along two wider and important navigable passages. Maritime choke points are naturally narrow channels of shipping having high traffic because of their strategic locations
2. Straits of Malacca and Strait of Hormuz.

9.5

1. International Maritime Organization and International Ship and Port Facility Security Code.
2. Ministry of Defence, Ministry of Home affairs, Ministry of Fisheries and Ministry of Shipping. Agencies are as follows: National Technical Research Organisation, Research and Analysis Wing, Intelligence Bureau, Narcotics control bureau, Directorate of revenue intelligence
3. Indian Coast Guard (ICG) is responsible for the security of coastal and territorial waters. It was formally established on 18th of August 1978 by the Coast Guard Act, 1978.

10

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ROLE AND EQUIPMENT USED BY THE ARMED FORCES

India boasts of having the second largest Army in the world - an Army battle hardened on all possible types of terrain from the icy heights of the Siachen Glacier to the deserts of Rajasthan and from the plains of Punjab to the forests of the North East. India, due to unresolved border disputes and hostile neighbours, is required to maintain a well-equipped armed force at all times.

The army is required to be prepared for external threats as well as internal disturbances. India faces challenges from the threat of militancy in the North Eastern parts and state sponsored terrorism in Jammu and Kashmir. Indian army is constantly modernising by inducting new weapons & technology to face all threats. India today is the world's largest importer of military hardware.

In this module, we shall learn about the major weapons and equipment that are presently in service in the Armed Forces of our country. For ease of understanding the details of weapons and equipment are outlined as per the role and tasks of the various combat arms of the Army, Navy and Air Force.

Objectives

After studying this lesson, you will be able to:

- explain the role and function of Infantry, Armoured Corps, Mechnised Infantry, Artillery, Engineers, Army Air Defence, Army Aviation Corps, Signals;
- describe the different kind of Naval ships and
- explain the Indian Air Force, its role and equipment.

10.1 Infantry

Over the centuries it has always been the foot soldiers who have led and captured

land in enemy territory. They also man our borders and have defended the territorial boundaries from invaders. History is replete with the valiant saga of scores of men who have defied odds to win battles for their armies.

Infantry is the major arm of the Indian Army. It is an arm of close combat with the task of closing in with the enemy to physically assault and capture ground. It is also required to prevent aggression within.The infantry is heavily committed in undertaking Counter Insurgency and Counter Terrorist Operations. To perform the assigned tasks, the infantry should be equipped with the under mentioned weapons and equipment.

Infantry's Weapons and Equipment

Assault Rifle, Sten Machine Carbine, 9mm Pistol and Hand Grenades are the personal weapons for individual soldiers. All soldiers and officers carry one of these weapons along with hand grenades when they go to war. You can identify them from the illustrations given.

5.56mm INSAS RifleFixed Butt AK- 47 Rifle

Fig 10.1- Assault Rifles

Fig 10.2 - 9mm Sten Machine Carbine

Fig 10.3 - 9mm Pistol

Source : common.wikimedia.org

Fig 10.4 - Hand Grenades Source : pixbay.com

5.56mm Light Machine Gun: It can fire effectively up to 700m. It is an automatic gun and has a higher rate of fire than an assault rifle. It is useful in breaking the enemy forming up for final charge on own defences.

Fig 10.5 - INSAS Light Machine Guns

Rifle AK 203: It is a new assault rifle which is in the process of being introduced into the army. It will replace the INSAS weapon system and is manufactured as a joint venture between Russia and The Ordnance Factory Board, in Korwa, Amethi, Uttar Pradesh.

Fig 10.6 Kalashnikov AK 203 Assault Rifle

84 mm Rocket Launcher: This is used to destroy tanks, bunkers, vehicles etc. It can be used to illuminate the battle area as also for making smoke screens to hide movement of own troops.

Fig 10.7 - 84mm Rocket Launcher

51mm Mortar: This is used to fire high explosive bombs on enemy. It is an area weapon use which can destroy the enemy. It can also fire illumination and smoke bombs.

Fig 10.8- 51mm Mortar

7.62mm Medium Machine Gun: It can fire 600 to 1000 rounds per minute at an effective distance of 1800m. The 30mm Automatic Grenade Launcher is best suited to engage enemies in the open. It has an ammunition box that can hold 30 grenades. It can fire up to 2300m.

Fig.. 10.9 - 7.62mm Medium Machine

Fig 10.10- Gun 30mm Automatic Grenade Launcher

7.62mm Dragunov Sniper Rifle: It has an effective range of 800m and is widely used by sharp shooters and marksmen to eliminate individual enemy targets. It is very effectively used on the Line of Control at our borders in Jammu and Kashmir.

Fig - 10.11 - 7.62mm Dragunov Sniper Rifle

40mm Multi Grenade Launcher: It is capable of firing grenades up to 375m. It is very effective in urban areas and jungle terrain.

Fig - 10.12 - 40mm Multi Grenade Launcher

81 mm Mortars: It is an area weapon which can fire high explosives, smoke and illuminating bombs. Its effective range is 5000m (or 5 KM). It can fire in all types of terrain and in all weather conditions.

Fig - 10.13- 81 mm Mortars

Anti Tank Guided Missiles (ATGM): With a range of upto four kms, the ATGMs are very accurate and effective in destroying tanks in war.

Fig - 10.14 - [ATGM] Anti Tank Guided Missiles

Hand Held Thermal Imager (HHTI) and Battle Field Surveillance Radars (BFSR) The HHTI is used to detect enemy troops at 1.5 kms and vehicles up to 3 kms. It is very effective being used on the Line of Control where it is used for detecting terrorists and enemy troop intrusions. The BFSR can be used for detecting enemy movement for a distance upto 18 kms.

Activity 10.1

i) Watch the gutsy queen of battle 'the infantry' in action.
https:// www.youtube.com/watch?v=Lnco_ZOUrvo

ii) Watch the video to understand the personal weapons carried by the infantry soldier.

https://www.youtube.com/watch?v=Cf_G4Yot2tg

10.1.1 Armoured Corps

In ancient times as well as till the later part of the medieval period, a sizeable number of troops of major armies used to fight on horses as part of the Cavalry force. The Cavalry, while it gave speed and manoeuvrability to the troops, also exposed them to the dangers of enemy cannons and other weapons against whom they had little personal protection.

The tanks, which they now use, were introduced to cater to an arm of soldiers who could fire on well entrenched enemies and give them the shock effect before the infantryman charged with his bayonet. In modern times these armoured tanks have replaced the horses. The armoured tanks are capable of heavy fire power, quicker mobility and manoeuvrability. They are employed to destroy enemy tanks, blow up bunkers and churn the target area by over running the objective.

They give close support to the infantry which normally follows behind the tanks in the last few hundred meters before the final assault on the objective. Armoured tanks, though being quick and offensive, cannot hold ground like the infantry. Night vision capabilities have made the tanks more versatile and lethal. The Armoured tanks in battle are a great source of fear for the opponents.

It is documented in our history how the introduction of tanks at the Zoji la Pass in the 1948 war changed the course of the battle and gave victory to the Indian Army.

Let us look at the various types of Armoured vehicles in service with the Indian Army.

- **T-72 and T-90 Tanks :** Both these tanks are of Russian origin. The T-72 was the most popular tank after World War II. It was being used by over 40 countries worldwide. The T- 90 tanks are the upgraded versions of T-72 with greater mobility, fire power and lethality.

- **Main Battle Tank (MBT) Arjun :** It is an indigenously built tank with advanced features like automatic target locating, tracking and destruction. It has superior armour protection than the Russian T-90s.

- **Bridge Laying Tank :** As the name suggests, it is used to lay bridges over obstacle ridden terrain to enable tanks, troops and logistical transport to cross over. The indigenously made 20-meter long 'Kartik' bridge laying tank is one of the widest tank bridges in the world. The bridge can carry all types of tanks and other vehicles in service with the Indian Army, including the Arjun MBT.

ACTIVITY 10.2

i) Collect pictures of all the different types of tanks discussed in this section and paste in your notebook.

ii) Look up the internet link given below and read about the Role of tanks in Battle.

https://www.youtube.com/watch?v=kwvFlzNjYjU

iii) Use the link given below to watch the movie on the Battle at Zoji la Pass during 1948 Indo - Pak War. You will get an idea of what it takes to move the tanks at high altitude and fight.

https://www.youtube.com/watch?v=ns5ac5iwuZQ

10.1.2 Mechanised Infantry

Over the decades a need was felt to carry the infantry along with tanks which could give the offensive forces speed and fire power while keeping the soldiers safe and fresh to fight. The Mechanised Infantry is a combat arm that has the capability to carry soldiers on armoured vehicles called Infantry Fighting Vehicles (IFV) or Armoured Personnel Carriers (APC) to transport infantry directly into battle. They follow tanks and dismount the troops who then fight as infantry as and when required.

Their role is to close in with the enemy by manoeuvre, to destroy / capture the enemy, repel the enemy attack by fire, engage in close combat or counter attack. The troops move in vehicles called BMPs which provide quick mobility to assaulting troops rapidly through small arms and indirect fire to deliver the infantry up to the objective and there after continue to provide fire support from a flank. Currently, Russian made BMP-2 are in service in Mechanised Infantry. IFV can also float in water and cross water obstacles. It can carry ten personnel including the crew.

ACTIVITY 10.3

Watch Mechanised Infantry in Action and note down important points about it.
https://www.youtube.com/watch?v=c1Uqbfh7n_E-

Intext Questions 10.1

1. What is the number of soldiers a BMP can carry?
2. Write a short note on 'Main Battle Tank (MBT)'.
3. Write the full forms of ATGM, HHTI, BFSR.

10.1.3 Artillery

To unsettle the well- entrenched enemy and cause destruction to soften the target before the actual assault by instantly, there is a requirement of carrying out heavy bombardment. It is called preparatory bombardment. Some portion of this preparatory bombardment is done by the Air Force. The majority of it is left to the Artillery.

The role of Artillery is to severely deplete the enemy's will to fight through heavy bombardment. Artillery also fires at the enemy's concentration areas, logistic hubs and forward localities. They provide fire cover to infantry and armoured troops by softening enemy's resistance. They keep the enemy's head down and assist our troops in launching assaults with minimum casualty. In 'Operation Vijay' artillery played a stellar role in pulverising enemy's defences and causing heavy casualties. The Indian artillery fire was so intense that the snow and ice on the mountain top turned yellow.

- Main artillery guns 120 mm Mortars, 105mm Indian Field Gun, 155mm Bofors Gun, 130mm Field Arty Gun, 155mm Made in India 'Dhanush' are used by the Indian Army.

ACTIVITY 10.4

Collect pictures of the guns mentioned above and paste in your notebook.

- **Weapon Locating Radars (WLR):** These radars are used to locate enemy artillery guns and mortars,when they fire at us. By getting their exact location our own artillery then fires at enemy artillery and destroys it. This tactics is called "counter bombardment".
- **Unmanned Aerial Vehicle (UAV):** These are employed to look into enemy territory and collect intelligence. Israeli made Heron Mark II are extensively used to carry out recce of enemy area as also in locating terrorist movements in Jammu and Kashmir.
- **Long Range Recce and Observation System (LORROS):** It is used to locate and identify enemy troop and vehicle movement in war and for counter terrorist surveillance in Jammu and Kashmir. It is an optical device like a telescope.

ACTIVITY 10.5

Watch a Short movie on Artillery and answer these questions:
https://www.youtube.com/watch?v=kbxVnEDKSZw

(i) What is the range of the 155 mm BOFORS FH77 Gun?

(ii) What is the approximate cost of Precision Guided Munitions?

10.1.4 Engineers

Indian army is a modern army which is self- sufficient in fighting wars on all its terrains of mountains, plains, jungles, deserts and glaciers. The combat arms like the Infantry and Armoured critically need the support of the combat support arms to win wars. While the combat arms lead the assault into battle, the combat support arms ensure victory through fire power, logistics and technical assistance.

The foremost among the combat support arms are the Engineers. Engineers role is to ensure mobility, counter mobility and ensure survivability during war. They are tasked for laying tracks, helipads, airstrips, bridges, water sources, laying and breaching mines and construction of field defences. They also create obstacles in the path of the enemy by demolishing bridges to delay and cut off the logistic chain to the assaulting troops.

Major Engineer Equipments and Bridges are AM-50, PMS, Bridge Laying Tank,

Girder Bridge, Bailey Bridge and Pontoon Bridge.

ACTIVITY 10.6

Watch Army Engineers in action.

https://www.youtube.com/watch?v=oiHKMGo-7qs

10.1.5 Army Air Defence (AAD)

During war the enemy's intention is to destroy all our vital installations by aerial bombing. The aircraft with speeds faster than what the human eye can detect require sophisticated equipment and counter measures to nullify the evil designs of the enemy. The AAD is tasked to protect vital static installations like nuclear plants, air bases, radar sites etc from enemy air threat. They are also responsible for protection of Indian air space from enemy aircraft and missiles.

Resources available with AAD are Shilka, L-70 Gun , Kwadrat, Strella, IGLA Missiles, ZU- 23mm Guns, Tangushka and OSA AK -Surface to Air Missiles

ACTIVITY 10.7

Watch the military hardware of the Army Air Defence - https://www.youtube.com/watch?v=wkGH5cYdH9k

10.1.6 Army Aviation Corp

The combat arms at times of war and peace need assistance for recce of inhospitable or unknown terrain, casualty evacuation and ferrying of supplies to air maintained locations that need stocking of supplies especially during winters when all road communications gets closed owing to heavy snowfall. It is in such critical situations that the Army Aviation Corps charts its role to support the ground troops.

The versatile Army Aviation Corps operates in all kinds of terrain be it the deserts, plains, forest and high mountains to the bone chilling Siachin glacier. Its missions are mainly dedicated to casualty evacuation, ferrying of soldiers and supplies, recce and search and destroy operations.

The main helicopters with the aviation corps are Dhruv and Cheetah

ACTIVITY 10.8

Watch Army Aviation corps in action- https://www.youtube.com/watch?v=G4x-b9wz9u4

10.1.7 Signals

The troops during war require secure communication to pass and receive sensitive information. These are then used by commanders at all levels to plan and execute the various stages of war. The corps of signals is the backbone of the Army's communication setup. They handle military communications, operate and maintain Army Wide Area Network (AWAN) which is the Army owned internet. They protect against cyber threats from anti national elements.

They also carry out electronic warfare using technology and equipment developed by Defence Research and Development Organisation (DRDO). Basically their role is to ensure communication which enables commanders to gain information from the forward locations in war, issue instructions and orders lower to commanders and forward troops. Progress of the battle is also relayed to the higher commanders.

ACTIVITY 10.9

Watch the Corps of Signals in action.

https://www.youtube.com/watch?v=vgllbD71F3U

Intext Questions 10.2

1. What is the role of Infantry ?
2. Highligt the mission of Army Aviation Corps.
3. Explain the role of Arty.

10.2 Ships and Their Weapon System in the Indian Navy

The history of the naval might of India dates back to the Chola empire of South India who were at the height of their glory from the 10th to the 12th century AD. Today the major role of the Navy involves conduct of active operations during war and to undertake humanitarian assistance and disaster relief missions during peace. India has a coastline of 7516 Kilometres.

The Indian Navy safeguards and ensures security of the sea lanes of communication thus supports the trade [95% of total trade] that is transported by sea.They keep our seas and oceans safe from pirates.

Navy is effectively used to transport troops, five power & logistics to deal with situations in neighbouring countries as was done in Maldives in 1988.

The different kinds of Naval Ships are highlighted as under :

Aircraft Carriers : India has one Fleet Carrier (INS Vikramaditya - and one Light

Carrier (INS Viraat). An aircraft carrier is basically an airbase. In other words, it has warplanes on board that can take off and land while the ship is in water. INS Vikramaditya was bought from Russia and refitted. It can carry upto 34 Fixed Wing Aircrafts and Helicopters. The MIG 29K is the main fighter aircraft on board. With over 1,600 personnel on board, Vikramaditya is literally a 'Floating City'. Associated with this large population is a mammoth logistics requirement. The ship requires nearly a lakh of eggs, 20,000 litres of milk and 16 tonnes of rice per month to feed the crew. With her complete stock of provisions, she is capable of sustaining herself at sea for a period of about 45 days.

ACTIVITY 10.10

See INS Vikramaditya in action.

https://www.youtube.com/watch?v=EGhhwgQtuUg

- **Attack Submarines :** An attack submarine is a submarine that can sail under water and attack and sink other submarines, surface ships and merchant vessels. They could be deployed in groups/alone or assigned to protect other ships (like aircraft carriers). India has 15 attack submarines out of which 14 are conventional and one is a Nuclear submarine. A nuclear submarine has a nuclear power plant. All naval vessels use diesel engines for propulsion. A nuclear submarine uses nuclear energy for propulsion.

- **Destroyer :** A destroyer, as the name suggests, is a fast and versatile long-endurance warship. They are employed to escort bigger ships (like Aircraft Carriers) and engage in anti-submarine, anti-aircraft and anti-surface warfare. India has 10 destroyers. The Israeli Barak missiles and the indigenous naval version of Brahmos missiles are deployed on destroyers. INS Kochi is a destroyer class ship.

- **Frigate :** A Frigate is a warship that are smaller than destroyers and are employed to protect other warships and merchant marine ships. It can also be used in anti-submarine, anti-aircraft and anti-surface roles. India has 15 Frigates.

- **Corvette :** Corvettes are swift, manoeuvrable, lightly armed warship. They are smaller than a Frigate. They are usually considered the smallest vessel to be called a proper warship. India has 22 Corvettes.

- **Patrol Vessel :** Patrol Vessels are employed for border protection roles, including anti-smuggling and anti-piracy. They also undertake rescue operations.
- **Amphibious Warfare Ship :** Amphibious Warfare Ships are used to deploy ground troops during an amphibious assault. India has 10 Amphibious Warfare Ships.
- **Minesweeper :** A minesweeper is a small naval designed to clear mines in water and make the waterways safe for shipping and movement of own warships.

ACTIVITY 10.11

Find out the names of each type of ship used in the Indian Navy. Collect pictures of each type of ship and paste in your notebook.

Intext Questions 10.3

1. What is an attack Submarines ?
2. What is the role of Frigates ?
3. What is a Minesweeper ?
4. Highlight the task of a Destroyer?

10.3 The Indian Air Force, its Role and Equipment

The Indian Air Force was raised on 08 Oct 1932 as a supplementary support for the British Air force. It was called Royal Indian Air Force. Post-independence, after the country became Republic in 1950 the Royal Indian Air Force was rechristened Indian Air Force (IAF). Since 1950 the IAF has participated in four wars with Pakistan and one with China. The IAF has excelled in operations like Operation Vijay, Operation Meghdoot, Operation Cactus and Pawan.

The IAF's has also been shouldering the responsibility of actively contributing with its manpower and aircrafts for the United Nations Peace Keeping Missions. The IAF today is ranked fourth in the world owing to its might and professionalism. It is modernising at an accelerated pace and stands as a credible air power amongst the foremost Air Force powers in the world. The IAF has in its inventory, Fighters, Transport aircrafts, Helicopters, Air Defence Missiles and Radars. The aircrafts held by the IAF are highlighted below :

10.3.1 Fighters

MiG-21 BISON- Single engine, single seater multirole fighter/ground attack aircraft of Russian origin which forms the backbone of the IAF. It has a maximum speed of

Note

2230 km/hr (Mach 2.1) and carries one 23mm twin barrel cannon with four R-60 close combat missiles.

Jaguar A twin-engine, single seater deep penetration strike aircraft of Anglo-French origin which has a maximum speed of 1350 km /hr (Mach 1.3). It has two 30mm guns and can carry two R-350 Magic CCMs (overwing) alongwith 4750 kg of external stores (bombs/fuel).

MiG-27- Single engine, single seater tactical strike fighter aircraft of Russian origin having a maximum speed of 1700 km/hr (Mach 1.6). It carries one 23 mm six-barrel rotary integral cannon and can carry upto 4000 kg of other armament externally.

MiG-29- Twin engine, single seater air superiority fighter aircraft of Russian origin capable of attaining maximum speed of 2445 km per hour (Mach-2.3). It has a combat ceiling of 17 km. It carries a 30 mm cannon along with four R-60 close combat and two R-27 R medium range radar guided missiles.

Mirage-2000- A single seater air defence and multi-role fighter of French origin powered by a single engine can attain maximum speed of 2495 km/hr (Mach 2.3). It carries two 30 mm integral cannons and two matra super 530D medium-range and two R-550 magic II close combat missiles on external stations.

SU-30 MKI- Twin seater, twin engine multirole fighter of Russian origin which carries One X 30mm GSH gun along with 8000 kg external armament. It is capable of carrying a variety of medium-range guided air to air missiles with active or semi-active radar or Infrared homing close range missiles. It has a max speed of 2500 km/hr (Mach 2.35)

Tejas - It is India's light combat aircraft and is the highest multi-role supersonic fighter aircraft of its class. It will contribute towards achieving self sufficiency in production of defence equipment.

10.3.2 Transport Aircrafts

Avro- Twin engine turboprop, military transport and freighter of British origin having a capacity of 48 paratroopers or 6 tonnes freight and maximum cruise speed of 452 km/hr.

Embraer- The main role of employment of this executive Jet Aircraft is to convey VVIPs/VIPs to destinations within India and abroad. Air HQ Communication Squadron operates this aircrafts and it has maintained a flawless incident/accident free track record till date.

Boeing 737-200 Twin engine turbofan, VIP passenger aircraft of American origin with total seating capacity of upto 60 passengers. It has a maximum cruise speed of 943 km/hr

AN-32-Twin engine turboprop, medium tactical transport aircraft of Russian origin with a crew of five and capacity to carry 39 paratroopers or maximum load of 6.7 tonnes. It has a max cruise speed of 530 km/hr.

IL-76 - A four engine heavy duty/long haul military transport aircraft of Russian origin with a maximum speed of 850 km/hr. It has a twin 23 mm cannon in tail turret and capacity to carry 225 paratroopers or 40 tonnes freight, wheeled or tracked armoured vehicles.

C-17- The aircraft is capable of carrying a payload of 40-70 tons up to a distance of 4200-9000 km in a single hop. It gives IAF strategic air lift capability and has been used effectively in evacuating people strandled in other countries like Yaman Libya.

C-130J- The aircraft is capable of performing para drop, heavy drop, casuality evacuation and can also operate from short and semi prepared surfaces.

Cheetah- Single engine turbo shaft, helicopter of French origin having capacity to carry 3 passengers or 100 kg external sling loads. It has maximum cruise speed of 121 km/hr and can climb to 1 km in 4 minutes.

Chetak- Single engine turbo shaft, light utility French helicopter with capacity of 6 passengers or 500 kg load. It has a maximum speed of 220 km/hr.

MI-17 V5- The Mi-17 V5 is a potent helicopter platform, equipped with modern avionics and glass cockpit instrumentation. They are equipped with state-of-art navigational equipment, avionics and weather radar.

MI-26- Twin engine turbo shaft, military heavy lift helicopter of Russian origin with carrying capacity of 70 combat equipped troops or 20,000 kg payload. It has a maximum speed of 295 km/hr.

MI-25/MI-35 Twin engine turbo shaft, assault and anti- armour helicopter capable of carrying 8 men assault squad with four barrel 12.7 mm rotary gun and upto 1500 Kg of ammunition including Scorpion anti-tank missiles. It has a maximum cruise speed of 310 km/hr.

ALH Mark III - It has been made indigenously by HAL. It filled with electronic warfare equipment. It can carry out military operations by day and night.

ACTIVITY 10.12

India has conducted some memorable military operations in the past. Find out about Operation Cactus Lily, Operation Vijay, Operation Meghdoot and Operation Pawan (Sri Lanka).

Note

Also watch these to know more about our Air Force:

https://www.youtube.com/watch?v=o4REqFw9r10&t=4s

https://www.youtube.com/watch?v=JSbOiExdx0U

Intext Questions 10.4

1. Name the agency that manufactures the Advanced Landing Helicopters (ALH).
2. Describe the role of Cheetahs.
3. Write a short note on Mirage 2000.

What You Have Learnt

India has the second largest army in the world. With a mammoth variety of military equipment presently in use in the Armed forces, it is important to know the role of each arm in the Armed Forces and the weapons and equipment that it uses to achieve its desired aim. We have briefly touched upon the characteristics of all weapons and equipments of the Indian Army, Navy and Air Force to give a first-hand knowledge on the subject. You have also studied Infantry, Artillery, Engineers, Army Air Defence, Army Aviation Corp, Signals. Relevant links to videos have been added for better assimilation and identification of the weapons, ships, helicopters and aircrafts.

Terminal Exercises

1. Explain the role of the infantry and the weapons and equipment that are authorised to it ?
2. What are the tasks undertaken by the Navy?
3. Name the different types of ships and their assigned missions.
4. Why is Indian Air force considered to have unmatchable capabilities against its rivals? Explain by giving brief details of the fighter aircrafts that it has for its operational requirements.

Answers to Intext Questions

10.1

1. It can ten personnel including the crow.
2. It is an indigenously built tank with advanced features like the automatic target

locating, tracking and destruction. It has superior armour protection than the Russian T-90s.

3. ATGM : Anti Tank Guided Missiles

HHTI : Hand Held Thermal Imager

BFSR : Battle Field Surveillance Radars

10.2

1. Infantry is an arm of close combat with the task of closing in with the enemy to physically assault and capture ground. It is also required to prevent aggression on own territory. Owing to the proxy war being waged in Jammu and Kashmir and the insurgency movement in the North East, the infantry is heavily committed in undertaking Counter Insurgency and Counter Terrorist operations.

2. Its missions are mainly dedicated to casuality evacuation, ferrying of soldiers and supplies, recce and search and destroy operations.

3. The role of Artillery is to severely deplete the enemy's will to fight through heavy bombardment on its concentration areas, logistic hubs and forward localities before and during assault by own troops. They provide fire cover to infantry and armoured troops by softening enemy's resistance. They keep the enemy's head down and assist our troops in launching assaults with minimum casualty.

10.3

1. An attack submarine is a submarine that can sail under water and attack and sink other submarines, surface ships and merchant vessels. It could be deployed in groups/alone or assigned to protect other ships (like aircraft carriers).

2. Frigates are warships that are smaller than destroyers and are employed to protect other warships and merchant marine ships. They can also be used in anti-submarine, anti-aircraft and anti-surface roles.

3. A minesweeper is a small naval warship designed to clear mines in water and make the waterways safe for shipping and movement of own warships.

4. A destroyer as the name suggests is a fast and versatile long-endurance warship. It is employed to escort bigger ships (like aircraft Carriers) and engage in anti-submarine, anti-aircraft and anti-surface warfare.

10.4

1. Hindustan Aeronautical Limited (HAL) at Bengaluru.

Note

2. They are used for Search and Rescue (SAR) Operations and Casualty Evacuation.

3. Mirage 2000s are single seater air defence and multi-role fighter of French origin powered by a single engine. It can attain max speed of 2495 km/hr (Mach 2.3). It carries two 30 mm integral cannons and two matra super 530D medium-range and two R-550 magic II close combat missiles on external stations.

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MODERNISATION OF THE INDIAN ARMED FORCES

India is an aspiring super power. To achieve its destined place among the elite armies of the world it requires to modernise its armed forces. The desire to modernise is also propelled by the continuous threat from its immediate neighbourhood.

The continuing clashes over unresolved boundary disputes with China and Pakistan, terrorism in Jammu and Kashmir, insurgency in the North Eastern states, the uncontrolled menace of left wing extremism, and the rising challenges from urban terrorism has further complicated India's security environment. To fight a modern day war it must have modern day weapons.

Objectives

After studying this lesson you will be able to:

- explain the necessity for modernisation of the armed foces i.e. Army, Navy and Air Force and
- assess the challenges that are facing India in rapid modernisation.

11.1 Modernisation of the Armed Forces

Ideally any country should have 1/3rd of its military hardware of vintage origin, 1/3rd should be state of the art and the balance should be futuristic. With an intention to speed up the pace of modernisation of the existing military equipment many policy decisions and actions have been taken to overhaul the entire war machinery of our country. The focus is both on acquiring the latest military hardware from the international market as also to manufacture them indigenously. We shall discuss each of the Arms i,e Army, Navy and Air Force separately.

11.1.1 Army

The present security threat at our borders with China and Pakistan as also the pressing

requirement for upgrading our ageing weapons and ammunition has propelled the government into fast tracking the procurement process. The modernisation plan have been prioritised to give the Army the cutting edge over its contemporary rivals. Some of the planned acquisitions are highlighted as under :

- Process to acquire 7 lakh Assault Rifles, 44,000 Light Machine Guns and 44,600 Carbines has been initiated in Sep 2017. These are the basic personal weapons for a soldier and his smallest fighting unit, the section.
- The effort is also on to make the weight of the battle load lighter by procuring lighter personal kit, ballistic helmets with communication facilities as also lighter weapons and body armour (bullet proof jackets).
- Battlefield Management Systems (BMS)- The BMS is aimed to integrate combat units- armoured, artillery and infantry regiments, infantry battalions, helicopter flights, etc. - into a digital network that will link together all components of the future battlefield. It will enable the senior commanders to know the precise location of every soldier and weapon with whom commanders can exchange reports, photos, data and verbal and written communications.
- The mechanised forces are being modernised with Tanks and Infantry carrying vehicles to make them more versatile in terms of operability, mobility and lethality. India proposes to progressively induct as many as 248 Arjun Main Battle Tanks, 1,657 Russian-origin T-90 Main Battle Tanks, apart from the on-going upgrade of its T-72Tank fleet.
- The improved features are night vision capabilities with a thermal imaging system for detecting all kinds of missiles, mine ploughs to dig out mines, the ability to fire anti-tank missiles, Advanced Air Defence gun capable of shooting down helicopters with a 360 degree coverage, Automatic Target Tracking (ATT) providing a greater accuracy when it comes to moving targets and superior Laser Warning and Control systems. There are also six additional regiments being raised for High Altitude conditions.
- The Indian Army will also upgrade its entire (BMP-2). Infantry Combat Vehicle (ICV) fleet to enhance their ability to address operational requirements. Upgrades include integration of the futuristic fire control system, twin missile launchers and commander's thermal imaging panoramic sights, anti- tank guided missiles as well as automatic grenade launchers.
- Under the Field Artillery Rationalisation Plan, the army plans to procure 3000 to 4000 artillery guns at a cost of US$3 billion. This includes purchasing 1580 towed, 814 mounted, 180 self-propelled wheeled, 100 self-propelled tracked and 145 ultra-light 155 mm/52 calibre artillery guns. After three years of searching and negotiations, India ordered 145 ultra-light 155 mm/52 howitzers from USA in September 2013.

- The Army Air Defence is an extremely important arm as it provides Low Level Air Defence. Two Regiments of indigenous Akash Missiles have been ordered from DRDO. Further trials are on for Very Short Range and also Short Range missiles.
- High Technology aspects concern Artificial Intelligence, Robotics, Nano Technology, Non- Lethal Weapons, Directed Energy Weapons and NBC warfare. Research in all these fields is progressing at a steady pace. Artificial Intelligence and Robotics are in a nascent stage of development. Rapid strides are needed to be taken in the field of Nano technology and it would lead to reduction of size and weight which would be suitable for our High Altitude and Glaciated regions.

11.1.2 Navy

The Indian Navy has been focusing on developing indigenous capabilities, systems, sensors and weapons as part of the nation's modernisation and expansion of its maritime forces. To secure our maritime Exclusive Economic Zones as also to maintain credible deterrence in the Indian Ocean our naval ships and aircrafts are deployed from the Gulf of Aden to the Western Pacific on an almost 24x7 basis.

The emerging threat from China in the Indo Pacific arena as also the Chinese muscle flexing by deploying more naval assets is posing security challenges which need to be addressed at the earliest. To mitigate such threats many actions have been taken for the modernisation of the Navy. The main highlights are as under:

- India has kick-started an ambitious project to build six nuclear-powered attack submarines that is expected to boost the Navy's overall strike capabilities in the face of naval build-up by other countries and increasing military manoeuvring in the Indo-Pacific region.
- There are 34 ships under construction and projects worth Rs 40,000 crores have been identified for participation of the private shipyards.
- In near future Indian Navy surface combatant fleet is likely to be
  - 03 Carriers
  - 10 Destroyers
  - 24 Frigates
  - 20 Corvettes
  - 20 Submarines
- Indian warships' primary air-defence cover is provided by the Barak-1 Surface to Air Missile. An advanced version of Barak-8, developed in collaboration with Israel has also entered service. India's next-generation Scorpene class

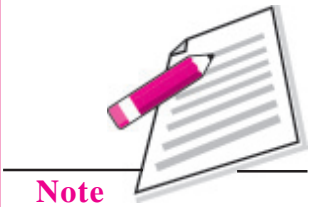
submarines will be armed with the Exocet anti-ship missile system. Among indigenous missiles, a ship-launched version of Prithvi-II, called the Dhanush, which has a range of 350 kilometres (220 mi), can carry a nuclear warhead.

- The Indian Navy is inducting the indigenous HAL Dhruv as a multi-role utility platform. In the long-range maritime reconnaissance (LRMR) role, the navy uses Boeing P-8I Neptune and has issued a global tender for nine medium-range maritime reconnaissance (MRMR) aircraft for coastal defence.
- Attack submarine INS Chakra and the development of INS Arihant make the Indian Navy one of six navies worldwide, capable of building and operating nuclear-powered submarines.

11.1.3 Air Force

The IAF is authorised 42 squadrons of Aircrafts. Each Squadron is authorised 18 aircrafts. Today it has a strength of 32 squadrons only. It also had to phase out its vintage MiG 21 and MiG 27 fleet that together form 11 squadrons. With threats looming large on two fronts i,e China and Pakistan, the IAF is in dire need of upgradation and modernisation. To augment the fighting potential of the IAF, the steps being taken are highlighted as under:

- 36 Rafale Fighter aircrafts, the state-of-the-art fighter aircrafts, are being purchased from France. The delivery is to begin soon.
- The other deal that has started rolling are the 83 Tejas 1A aircraft. Tejas is a single engine, multi-role fighter aircraft designed and built by India.
- A deal for 22 Apache AH 64 attack helicopters and 15 Chinook heavy-lift helicopters was signed in September 2015 when Prime Minister visited US. Both the helicopters are manufactured by Boeing. The Apaches will replace the aging MI 35E attack helicopters while the Chinooks will serve as a replacement for the MI 8 Russian helicopters.
- IAFs acquisition of the C-130J Super Hercules and C-17 Globe master III has increases the needs of special missions also of the strategic military lift capability.
- IAF has started upgrading its combat aircraft fleet since the last few years in order to enhance its operational capability and maintain its aircraft as modern weapon platforms, capable of meeting the present challenges posed by the security scenario in our region. It is also considering to upgrade its medium lift helicopters comprising MI-8, MI-17 and MI-17-IVs, as also the AN - 32 transport aircraft, with the aim of improving their overall capability.
- There are also plans to induct very many advanced aircrafts in the field of Mid Air Refuelling, Trainer jets, Airborne Warning systems, Unmanned Combat Aerial Vehicle, Cruise and Surface to Air Missile Systems.



Intext Questions 11.1

1. Ship-launched version of Prithvi-II is called the _____.
2. IAF is planning to phase out MIGs ___ and ____ from service.
3. The Apaches will replace the aging _____ attack helicopters.

11.2 Challenges in implementation of Modernisation of Armed Forces

You have seen how advances in science has improved the weapon system and fighting capabilities of the armies the world over. Economy pays a major role in modernisation of the armed forces. We have to balance our requirements to maintain and modernise the armed forces with other development efforts. The major aspects that need to be understood on modernising the armed forces are given below:

- **A Military Strategy to address National Security-** National security is determined by the threats that a nation faces. Military strategy is the ability to identity and respond to a threat. In olden times armies fought in battlefield. Today there are terrorist, insurgency and cyber threats. The armed forces have to modernise to face such threats.
- **Economy -** The country's economy is determined by the Gross Domestic Product (GDP). The bigger the GDP the faster is the economic growth. Faster the economic growth, quicker will be the modernisation of the armed forces.
- **Adequate Budget Allocation -** Defence is allotted budget every year as part of the country's yearly budget. Modernisation requires a huge allocation since modern arms and ammunition are purchased from other countries. This allocation of budget depends upon the economic growth. India is now under 'Make in India' project and is hoping to reduce dependence on other countries and also save money.
- **Research in Military Technology, Artificial Intelligence and Cyber Warfare -** A portion of the defence budget is given to research and development. A good research and development will make the country self sufficient in critical technology. For this we must modernise Defence Research and Development Organisation (DRDO), and Defence Public Sector units such as, Ordnance Factory Board (OFB), Bharat Electronics Limited, Bharat HeavyElectrical etc.

Intext Questions 11.2

1. India is largest importer of arms the in the world. True or False
2. What is the full form of DRDO?

3. Name any one DPSU.
4. Mention any three challanges being faced by the Armed Forces in the way of modernisation.

ACTIVITY 11.1

Do you know how many Defence Public Sector undertakings are there in India? Find out their numbers, names and the items being manufactured by each enterprise.

What You Have Learnt

In this chapter you have learnt about threat perceptions in our neighbourhood and thereafter the various modernisation proposals which are in the planning stages or in the delivery stage. The reasons for the slow pace of modernisations have been enumerated.

Terminal Exercises

1. What are the major weapons that are being planned to be procured for the Army?
2. Explain the challenges facing the Army's modernisation programme?
3. Why does Indian Armed Forces need urgent modernisation?

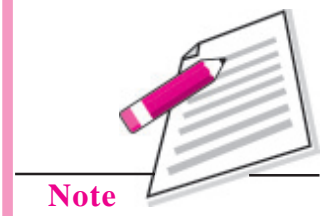
Answers to Intext Questions

11.1

1. Dhanush
2. MIG 21 and MIG 27
3. MI 35 Helicopters

11.2

1. True
2. Defence Research Development Organisation
3. Hindustan Aeronautics Limited
4. Challanges
   - (i) A military strategy to address national security.
   - (ii) Economy
   - (iii) A dequate budget allocation



Note

12

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NUCLEAR WARFARE

In the previous module, we have learnt about the various conventional weapon systems held by the Indian Armed Forces. We also learnt about the future military technology. Both conventional weapons and non-conventional weapons are used in present day warfare. Nuclear, biological and chemical warfare are weapons of mass destruction or popularly called WMD. Biological & Chemical weapon systems and warfare are banned under the international rules and treaties. However, the use of these weapon systems by nations cannot be ruled out.

In this lesson we will learn about the nuclear warfare. We will also learn about the various basic terms of nuclear reactions. A brief insight into what is a nuclear weapon and the various effects of nuclear weapon will also be given. The various protection mechanism against the nuclear effects will also be discussed.

Objective

After studying this lesson, you will be able to:

- define the basic terms used in nuclear science;
- explain the energy yield of nuclear explosion;
- list the characteristics of a nuclear explosion;
- explain the effects of a nuclear explosion;
- explain the meaning of nuclear radiation and
- suggest the protective measures to be taken against the effects of a nuclear explosion.

12.1 Basic Terms

12.1.1 Nuclear Energy

In a conventional explosion such as bombs, the energy released results from chemical

reactions of the atoms of hydrogen, carbon, oxygen, and nitrogen present in the high-explosive material. In a nuclear reaction, redistribution or a recombination of the protons and neutrons of the atoms takes place. This produces the energy that is tremendously greater than the conventional energy.

Two kinds of nuclear reactions are used for the production of large amounts of energy in a short time. They are known as 'fission' (splitting) and 'fusion' (joining together). The fission process takes place with some of the heaviest (high atomic number) nuclei such as plutonium, which are split into smaller nuclei. In this process, a large amount of energy is released. Fission, on the other hand, involves some of the lightest (low atomic number) nuclei such as Helium and Hydrogen combining together to release energy.

12.1.2 Fission

When a free (or unattached) neutron enters the nucleus of a fissile atom, it can cause the nucleus to split into two smaller parts. It is accompanied by the release of large amount of energy. This is called the fission process. The materials used to produce nuclear explosions by fission are certain isotopes of Uranium and Plutonium. Uranium consists mainly of two isotopes. The Uranium isotopes are Uranium- 235 (about 0.7 per cent), and Uranium-238 (about 99.3 per cent). Uranium-235 is readily fissile and is commonly used in nuclear weapons. Another isotope, Uranium-233 is also readily fissile. Uranium-233 is made artificially from Thorium-232. Plutonium-239 is yet another fissile isotope used in nuclear weapons made artificially from Uranium-238.

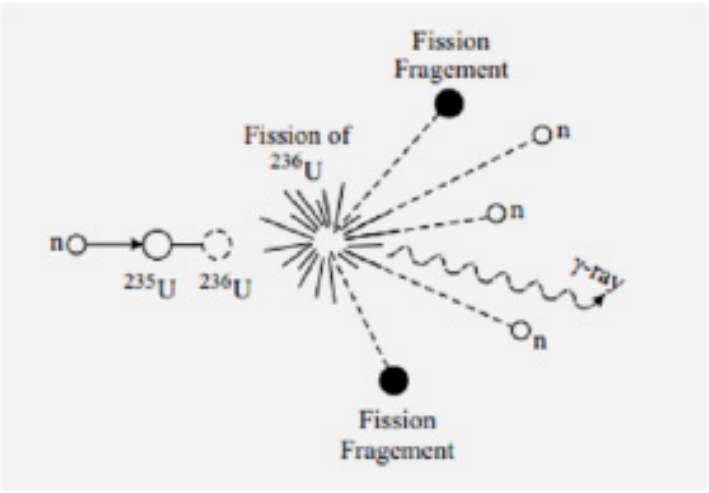


Fig 12.1 – Fission Process

12.1.3 Fusion

In nuclear fusion, a pair of light nuclei unite (or fuse) together to form a nucleus of a heavier atom. For example the fusion of the Hydrogen isotope is known as Deuterium or 'heavy hydrogen'. Under suitable conditions, two Deuterium nuclei may combine to

form the nucleus of a heavier element - Helium, with the release of energy. A nuclear fusion reaction is brought about by means of very high temperature, and they are thus referred to as 'thermo-nuclear processes'.

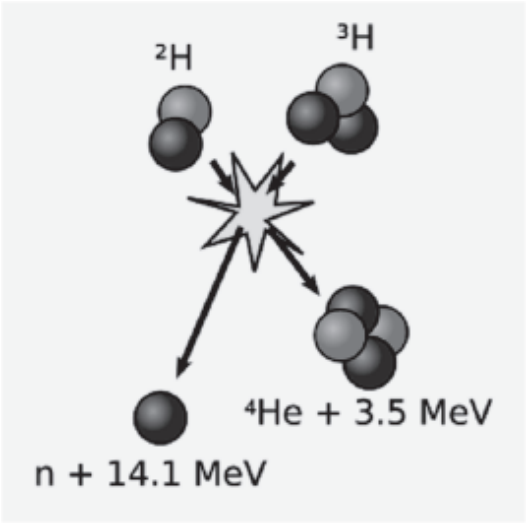


Fig 12.2 – Fusion Process

12.1.4 Chain Reaction

A chain reaction or nuclear chain reaction is a sequence of reactions. A reactive product or by-products from the first reaction followed by additional reactions to take place. In a chain reaction, positive feedback leads to a self-amplifying chain of events. In nuclear chain reaction a high speed neutron is used to bombard the nucleus of the fissile atom. This breaks the nucleus into smaller atoms and in the process also releases additional high-speed neutrons. These high-speed neutrons bombard with the other atoms of fissile material. This process continues to form a nuclear chain reaction. The uncontrolled nuclear chain reaction leads to the release of large amount of heat energy, which causes destruction.

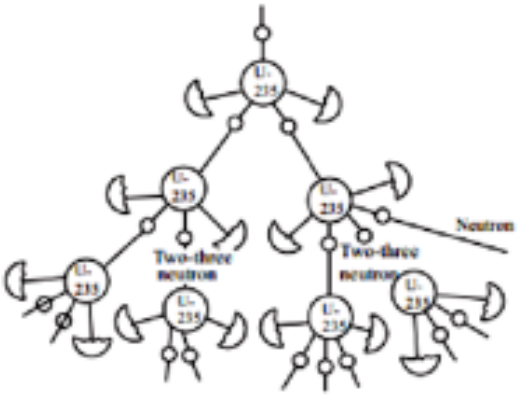


Fig. 12.3

Note

12.2 Energy Yield of Nuclear Explosion

The 'yield' of a nuclear weapon is a measure of the amount of explosive energy it can produce. The yield is expressed in terms of the quantity of TNT that would generate the same amount of energy when it explodes. Thus, a 1 Kiloton (KT) nuclear weapon is one which produces the same amount of energy in an explosion as does 1 kiloton (or 1,000 tons) of TNT. Similarly a one megaton (MT) weapon would have the energy equivalent of 1 million tons of TNT.

12.2.1 Types of Bursts

A nuclear bomb can be made to burst on ground, air or higher in the atmosphere. Depending on the location or point of burst in relation to the surface of the earth, the effects of a nuclear blast varies. The point of nuclear explosion may be therefore classified as follows: -

(a) **Exo-Atmospheric:** A burst occurring outside the earth's atmosphere (over 30kms above the earth's surface) is called an exo-atmospheric burst.

(b) **Endo-Atmospheric:** A burst, which occurs within the earth's atmosphere, is called an endo -atmospheric burst. These can be further divided into:-

(i) **High Altitude Air Burst :** A high altitude burst is defined as the one in which the explosion takes place at an altitude in excess of 30,000 m. At these heights, the air density is so low that the interaction of the weapon energy with the surroundings is markedly different from that at lower altitudes. The effects of blast, thermal and nuclear radiations of such bursts are negligible at ground level but radar and wireless communications may get affected over a large area for a long duration.

(ii) **Air Burst:** When a nuclear explosion takes place below 30,000 m of altitude, the weapon residue immediately incorporates material from the surrounding medium and forms an intensely hot and luminous mass, which is roughly spherical in shape. For an airburst, the height of burst should be such that the fireball does not touch the surface of earth.

(iii) **Surface or Ground Burst :** When the point of burst is such that the fireball touches the surface, then it is a surface burst.

(iv) **Sub-Surface Burst :** When the point of burst is beneath the ground, it is a subsurface burst. A very shallow burst is indistinguishable from a surface burst because the fireball will still be produced above the ground. In a deeper burst, a gas bubble will be formed, instead of fireball.

(v) **Underwater Burst:** When the point of burst is under the sea, it is an underwater burst.

Note

Intext Questions 12.1

1. Fill in the blanks:-
   (a) The chemical reaction in which a pair of light Nuclei unites together to form a nucleus of a heavier atom is called _____ reaction.
   (b) The chemical reaction, which causes the nucleus to split into two smaller parts, is known as _____ reaction.
2. Mention the different types of Endo-atmospheric bursts.
3. What is meant by thermo-nuclear process?

12.3 Characteristics of Nuclear Explosion

The characteristics of a nuclear explosion would vary depending upon the type of burst. They are: -

(a) An intense bright flash.
(b) A fireball.
(c) A thermal heat pulse of thermal radiation.
(d) A pressure wave-giving rise to blast and shock.
(e) Radiation.
   (i) Initial radiation.
   (ii) Residual radiation from neutron induced activity in the ground and the fall-out of radioactive material.
   (iii) Transient radiation effects on electronics (TREE).
(f) Electro-magnetic phenomenon.
(g) A prominent cloud.

ACTIVITY 12.1

Watch the movie "BBC History of World War II Hiroshima". Follow the link:-

https://www.dailymotion.com/video/xlk8my

or

http://www.documentarytube.com/videos/history-of-world-war-ii-hiroshima

Note

Intext Questions 12.2

1. TREE stands for _____

2. Name any two types of radiations.

12.4 Effects of Nuclear Explosion

Understanding the major effects of the nuclear explosion helps us to prepare better if an attack should occur. The effects of flash, heat, blast and radiation depends on the size and type of weapon, the weather conditions (sunny or rainy, windy or still); the terrain and height of explosion. In a nuclear attack, most of the people within a few km of the explosion will be killed or seriously injured by the blast, heat or initial radiation. Similarly, all the other natural and manmade structures will be either completely or almost destroyed. Let us see the effects of Flash, Heat and Blast that occurs from a nuclear explosion.

12.4.1 Flash Effects

- **Dazzle:** The intense flash from a nuclear burst can affect vision at long ranges due to dazzle and eye damage. Dazzle, (sometimes called 'flash blindness') is a temporary loss of vision resulting from the brightness of the visible burst. It will only be of significance to personnel unaffected by other nuclear effects. As a guide, in daylight only those facing the burst are likely to be dazzled for about two minutes. At night, dazzle will affect those facing the burst for about 10 minutes and those facing away for about three minutes.
- **Eye Damage:** Retinal burns occur when the eye lens focuses the fireball image on to the retina. Shallow burns heal completely. Deep burns lead to permanent blind spots. However, sight is not normally lost completely.

12.4.2 Heat or Thermal Effects

Heat is a principal casualty producing effect. It is likely that some 50% of nuclear weapons casualties will suffer burns: -

(a) To exposed skin unprotected from the thermal pulse.

(b) From charred or burnt clothing and/or local fires.

- **Degree of Burns in Personnel :-**
  - First Degree- involve the top layer of skin.
  - Second Degree- involve the first two layers of skin.
  - Third Degree - involve all layers of the skin and cause permanent tissue damage

Note

- **Heat Effects on Materials:** The thermal pulse delivers a large quantity of heat in a very short time. Damage will be related to the amount of heat absorbed. Fires started by the ignition of paper, fabric, netting, vegetation and other combustible material are likely to cause a major secondary hazard.

12.4.3 Blast and Shock Effects

The pressure wave from a nuclear explosion causes a blast wave in the air and a shock wave through the ground. It is likely to produce 35% casualties.

- **Effect on Personnel:** The human body has lot of resistance to the blast overpressure. The main danger is from indirect effects, such as: -
  - The collapse of buildings and field defences or overturning of vehicles.
  - The impact of flying debris.
  - Injuries caused to personnel by being picked up and flung by the wind.
- **Damage to Infrastructure:** The damage suffered by equipment and installations is likely to be:-
  - Antenna broken off; cables stretched and severed.
  - Vehicles, aircraft and equipment overturned.
  - Buildings and field defences collapses.
  - Earthworks collapsed by the ground shock wave.
  - Supplies, equipment and weapons blown away by the winds.
- **Terrain Effect:** The most significant terrain effect will be the falling down of structures and trees. Pressure wave follows ground undulations; hence terrain affords little protection from blast and shock.

The estimated size of the damage caused by the 16 KT and 22 KT atomic bombings of Hiroshima and Nagasaki is schematically depicted for you.

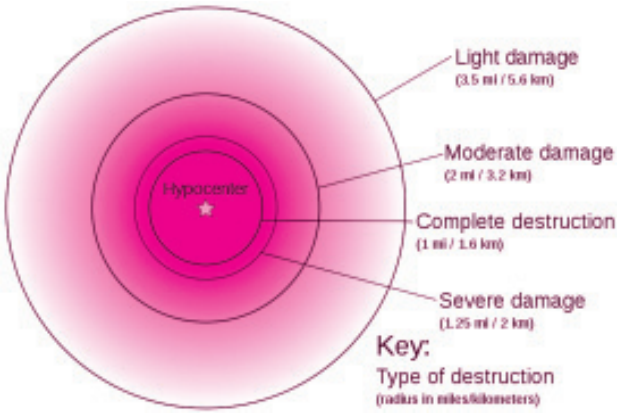


Fig 12.4 - An estimate of the size of the damage caused by the 16 KT and 22 KT atomic bombings of Hiroshima and NagasakiFig 12.3- Nuclear Chain Reaction

Note

12.5 Nuclear Radiation

Nuclear radiation is divided into two categories:

(a) **Initial:** Initial radiation is defined as that emitted during the first minute following detonation. It consists of gamma radiation and neutrons produced during fission or fusion, which irradiate material.

(b) **Residual:** Residual radiation is that which remains after one minute, post detonation. It is essentially neutron induced activity and 'fallout' of radioactive material.

When a nuclear weapon detonates, many neutrons are released. These cause imbalances in the nucleus of weapon material, the atmosphere and in the elements they interact. Many of these substances become radioactive resulting into emission of alpha and beta particles accompanied by gamma radiation. The ground area beneath a nuclear burst can become highly radioactive due to this process.

12.5.1 Nuclear Fallout

A fireball contains vapourised weapon residue. Radioactivity is induced into this fireball material by neutron bombardment. As the fireball rises, it will cool and form a cloud, which stabilizes in height and size. At the same time, the radioactive particles in the cloud begin to fall back towards earth. These particles travel along with the wind to settle and form areas of radioactive contamination. If rain falls through the radioactive cloud, water falling on ground also contaminates the ground and is called 'rainout'.

12.5.2 Radiation Effects on Personnel

All forms of nuclear radiation can cause injury to man. Cell death or damage is caused by ionization of body cells by gamma radiation. Blood cells, the stomach lining and the skin are more readily damaged than bones and muscle. Beta particles on or close to the body cause 'beta burns' in the form of lesions or blisters, which can take long time to heal and are open to infection. Alfa particles cause intense ionization of body cells, if in contact. Any radioactive particles ingested or otherwise admitted to the body may be toxic, in addition to the hazards created from radiation.

- **Symptoms of Radiation Damage:** The symptoms of radiation effects in personnel are usually described as 'radiation sickness'. Some of them are given below: -
  - Initial symptoms of headache, nausea, vomiting, diarrhea and general malaise.
  - A symptom-free period with apparent recovery.

Note

- The development of latent symptoms such as loss of hair and appetite, sore throat, fever, hemorrhages, prolonged incapacitation or death.

- **Radiation Sickness:** The human body has some ability to repair the damage caused by radiation but this is not complete. Radiation doses have a cumulative effect. A person receiving a dose of 100 centi Grays (cGys) on three occasions accumulates a total of 300 cGys (Gray is the unit of measure of nuclear radiation. It is also called rads). The damage and symptoms, however, depend not only on the dose but also on the rate of receipt each time and the interval between exposures. Individuals are affected by radiation to different degrees, hence radiation dose figures should only be regarded as a guide: -
  - Below 150 cGys - no long term effects for most personnel.
  - From 150 to 450 cGys - some incapacitation with possible death.
  - From 450 to 800 cGys - incapacitation and death most likely in the ensuing weeks.
  - Above 800 cGys - severe incapacitation and certain death.

12.5.3 Radiation Effects on Electronics

The initial radiation pulse mainly consists of gamma rays and neutron flux. When they directly interact with electronic components, a phenomenon called Transient Radiation Effect on Electronics (TREE) occurs. The pulse of high-energy gamma rays lasts for a fraction of a second. It may destroy semiconductor devices by direct interaction. The neutron flux accompanying the gamma rays can affect semiconductors by changing their electrical characteristics such that performance is temporarily or permanently altered.

12.5.4 Electromagnetic Phenomena

Electromagnetic phenomena are immediate effects of a high altitude airburst or air burst. They can be divided into following categories: -

- **Atmospheric Ionization:** A nuclear explosion causes ionization of the atmospheric layers and changes their electrical characteristics. This disturbs the transmission of electromagnetic waves from radio and radar equipment, which pass through these disturbed areas. Periods of disruption may be short (a few seconds), but some systems could be blacked out for several hours until earth's magnetic field returns to normal.
- **Electro-Magnetic Pulse (EMP):** EMP is a very powerful burst of broadband radio energy of very short duration. It is harmless to man. The very high energy associated with EMP can cause damage to electrical and electronic equipment,

which may be permanent, interruptive or transient. For example it may cause: -

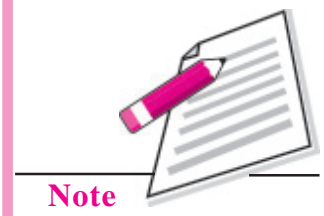
- Breakdown of insulation in cables and components
  - Tripping of relays and circuit breakers
  - Burnout of components within equipment
  - Corruption or clearance of electronic data stores
  - Explosive failure of susceptible equipment, which may cause human injury as a secondary effect.

12.5.3 The Fireball and the Radioactive Cloud

(i) **The Fireball:** A nuclear explosion leads to the liberation of a large amount of energy in a very small period of time within a limited quantity of matter. Because of the great heat produced by the nuclear explosion, all the materials are converted into the gaseous form. These gases cause tremendous pressure and lead to the formation of an extremely hot and highly luminous (incandescent) spherical mass of air and gaseous weapon residue, which is called the fireball. The surface brightness decreases with time, but after about a millisecond, the fireball from a 1-MT nuclear weapon, would appear to an observer, 80 kilometers away, to be many times brighter than the sun at noon.

(ii) **The Radioactive Cloud:** While the fireball is still luminous, the temperature in the interior is so high that all the weapon materials are in the form of vapour. As the fireball increases in size and cools, the vapour condenses to form a cloud, also called the mushroom cloud, consisting of solid particles of the weapon debris, as well as many small drops of water derived from the air sucked into the rising fireball.

Fig 12.5 – Mushroom Source : wikipedia.com



Note

Intext Questions 12.3

1. Fill in the blanks.
   (a) EMP stands for _____.
   (b) The electromagnetic phenomena consist of _____ and _____.
   (c) Degree of burns in personnel is classified as _____.
2. Mention the different categories of radiations.
3. List the initial symptoms of radiation sickness.

12.6 Protective Measures to be Taken Against the Effects of a Nuclear explosion

If you are in a city that is about to be hit by a nuclear missile, is there anything you can do that will increase your chances of survival? It entirely depends on where you are when the blast happens. Close to the fireball, the thermal energy is so intense that infrastructure and humans are incinerated. Underground bunkers and other facilities would do little as they too would be almost completely destroyed and there would be barely a physical trace that one ever existed. However, if you are a few miles away from the explosion your chances of survival are better.

12.6.1 The protective measures

Measures can be classified as individual protection and collective protection. The Individual Protective Equipment (IPE) or Personal Protective Equipment (PPE) consists of the following:-

(a) Two piece over-garment (coat and trousers) worn over Battle Dress or Uniform;

(b) Mask and respiratory protection consisting of filter canister with HEPA filter (which provides protection against radiological and biological particulates) and a charcoal filter (which provides protection against chemical weapon vapors);

(c) Gloves;

(d) Over-boots;

(e) Additional components like detection equipment, individual decontamination kit and antidotes for chemical hazard events

Fig 12.7 - Individual Protective Equipment

12.6.2 The collective protection

The collective protection is provided by construction of Nuclear Biological and Chemical (NBC) protected underground shelters. The shelter should be well stocked with food, water, medicines and should have working phone lines, a radio and other communication devices.

Intext Questions 12.4

1. IPE or PPE consists of (a) _____, (b) _____, (c) _____, (d) _____ and (e) _____.
2. The protective measures can be classified as _____ and _____.
3. Which essential materials should be stocked the by NBC Shelters.
4. Which type of communication facilities should the shelters have collective for protection ?

What You Have Learnt

- Simple and basic science of fission and fusion behind nuclear explosions and how it is used in a nuclear bomb;
- The various military terms of types of bursts which are Exo atmospheric and endo Atmospheric bursts of the nuclear bomb.
- What happens when a nuclear bomb is exploded. The bomb explodes into a mushroom shaped cloud giving intense head and blast. Then there is the nuclear fallout;

Note

- The effects of a nuclear bomb on humans and materials, which includes the blast, heat, radiation and electro magnetic effects;
- The protection required to be taken at the individual and collective level along with the quipment required in both the cases.

Terminal Exercises

1. Explain a nuclear chain reaction.
2. Explain radiation effects on personnel and infrastructure.
3. Distinguish between a Fireball and a Radioactive Cloud
4. What type of protective measures should be taken against the effects of a nuclear explosion?

Answers to Intext Questions

12.1

1. (a) Fusion
   (b) Fission
2. (i) High Attitude (ii) Air Brust (iii) Surface as Ground Bust
   (iv) Under Water Brust
3. A nuclear fission reaction is brought about by means of very high temperature. This is reffered as thermo-nuclear process.

12.2

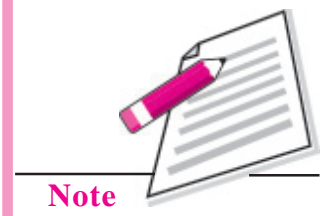
1. Transient radiation effects on electronics
2. Initial radiation and Residual radiation

12.3

1. (a) Electro-Magnetic Pulse
   (b) Atmospheric Ionization and Electro-Magnetic Pulse
   (c) I Degree, II Degree and III Degree
2. Initial and residual
3. Headache, nausea, vomiting, diarrhea and general malaise

12.4

1. (a) Two piece over garment
   (b) Mark and respiratory protection
   (c) Gloves
   (d) Over-boots
   (e) Additional components
2. (i) Individual protection
   (ii) Collective Protection
3. Food, water, medicines
4. Working phones, a radio and other communication devices



Note

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BIOLOGICAL WARFARE

In the previous lesson we have learnt about nuclear warfare. Now, we will learn about biological warfare (BW), also known as germ warfare. It is the use of biological toxins or infectious agents such as bacteria, viruses, and fungi for war. The intent could be to kill or incapacitate humans, animals or plants by using biological agents as an act of war.

Biological weapons are living organisms that reproduce or replicate within their host victims. Biological weapons may be employed in various ways to gain a strategic or tactical advantage over the enemy. Biological weapons may also be useful as area denial weapons. These agents may be lethal or non-lethal, and may be targeted against a single individual, a group of people, or even an entire population.

Like nuclear weapons, the use of biological weapons is also prohibited under customary International Humanitarian Law and International Treaties. The use of biological agents in armed conflict is a war crime.In this lesson we will learn about the biological warfare to include the basic terms used, the types of biological warfare agents, its characteristics, selection of BW agents and delivery means.

Objectives

After studying this lesson, you will be able to:

- define the basic terms used in Biological Warfare;
- classify the types, characteristics and selection of BW agents and
- explain the meaning of delivery of BW agents and their routes of entry into human body.

13.1 Basic Terms and Definitions

(a) Biological Agent - A biological agent is a micro-organism which causes disease in man, plants or animals, or causes the deterioration of material.

(b) Biological Warfare (BW) - Biological warfare is the use of biological agents

Note

to produce casualties in man or animals and damage to plants or material and defence against such use.

(c) **Aerosol -** An aerosol is a suspension of small particles (liquid or solid) in air. Mist and smoke are examples of aerosol. The size of the particle should not exceed 5 microns (1 micron or 1 micrometre = 1×10?6 metre = 0.001 mm)

(d) **Toxins -** Toxins are metabolic products of bacteria. They cause poisoning of organisms.

Intext Questions 13.1

1. Fill in the blanks:-
   (a) An aerosol is a suspension of _____.
   (b) Biological agent is a _____ .
2. What are toxins?

13.2 Types, Essential Characteristics and Selection of BW Agents

13.2.1 Types of Biological Agents

A biological agent is one which is highly infectious, easily produced and stored. They should be stable and suitable for use in the field. They should be able to produce a disease for which there is minimal immunity in the target population. There are four primary groups of microorganisms from among which a biological warfare agent is likely to be drawn.

They are classified as

(a) Bacteria

(b) Rickettsia

(c) Virus

(d) Fungi

(a) **Bacteria:** Bacteria are small, free-living microscopic organisms. They can be grown easily in the laboratory. They are distinguished from the cells of other organisms in having primitive non- membrane-enclosed nuclei. They are therefore said to be 'prokaryotic'. Certain bacteria, under unfavourable conditions, undergo change into a state of inactiveness and are called Spores. The spores become active when suitable or favourable conditions prevail. It is considered to be a defence mechanism because such bacteria can survive under unfavourable

conditions for a long period extending to years. The bacteria, which form spores, are also known as persistent BW agents. Bacillus anthracis, cause of anthrax, is a very important BW agent, which produces spores.

(b) **Rickettsia:** These are primarily parasites of insects and appear only secondary in man and other animals. The microorganisms characteristically inhabit the cell lining of the intestines and other tissues of the insects. They are found in a certain group of blood sucking insects, such as fleas, mites, lice and ticks. The rickettsia causes no injury to the insects but is often pathogenic to men and other animals. Some rickettsia cause diseases that are severe and often fatal. They are susceptible to antibiotic treatment. They grow only within living cells like viruses.

(c) **Viruses:** A virus is a small infectious agent that replicates only inside the living cells of other organisms. Viruses can infect all types of life forms, from animals and plants to microorganisms, including bacteria. Viruses are not cellular and therefore do not possess typical structures of a cell. No specific treatment is available against viruses; viruses do not respond to antibiotic treatment. However vaccination is effective. e.g. Small Pox

(d) **Fungi:** A fungus (plural - fungi) is any member of the group of organisms that includes microorganisms such as yeasts and molds. The most common example is mushrooms. Fungi may be regarded as primitive plants that do not produce its own food. They draw nutrition from decaying vegetation matter. Most fungi can exist either in a yeast-like state or as resistant spores. The fungi which produce toxins (mycotoxins) are important BW agents.

13.2.2 Essential Characteristics of BW Agents

A majority of BW agents employ germs. Some of these organisms can only grow and reproduce under suitable conditions and they are regarded as non-persistent as they are extremely susceptible to variation in temperature, humidity and sunlight. Some agents, such as anthrax, are highly resistant to climatic effects and can be classified as persistent. Some important and essential characteristic BW agents are: -

- **Infectivity:** The infectivity of microorganisms is defined as its ability to cause disease. A greater infectivity means that fewer microorganisms are required. It means how fast the microorganisms can enter the body of the target.
- **Virulence:** The infective penetration of sufficient microorganism may produce diseases of different severity. The most virulent strain produces the most acute or severe effects and is a better BW agent.
- **Incubation:** The incubation period is the time between the infective penetration of sufficient microorganisms into the body and the appearance of the symptoms of the disease. It is normally not less than 24 hours.

Note

- **Transmissibility:** Some microorganisms produce disease, which may be transmitted from man to man (e.g., Plague) which may cause an epidemic. However others do not, e.g., Anthrax. The greater the transmissibility, the better the BW agent.
- **Lethality:** Some microorganism will produce diseases which are usually lethal if the target population is not immune (e.g. Small pox). Others will give rise to illness which are incapacitating rather than lethal (e.g. influenza).

13.2.3 Selection of BW Agents

The characteristics of the BW agent chosen in terms of transmissibility, incapacitation, and/or lethality will depend on the effect required in the large population. For a micro-organism to be selected as a BW agent it must meet certain requirements:

(a) **Production:** Easy to produce in required quantity.

(b) **Storage:** Easy to store while maintaining its virulence. The BW agent may be stored as resistant spores (e.g. Anthrax), in liquid growth media, or as a 'freeze-dried' powder.

(c) **Dissemination:** The microorganisms must remain viable during transit and delivery.

(d) **Immunity:** No widespread or naturally acquired immunity against the chosen microorganism should exist in the target population.

(e) **Sensitivity to Environment:** Various environmental factors affect the use of microorganisms as air-borne BW agents and thus reduce their effectiveness: -

(i) **Atmospheric Stability:** A BW agent cloud may get rapidly dispersed in unstable atmospheric conditions.

(ii) **Wind Speed:** A high wind speed will carry an agent cloud quickly past the victim who may therefore be less at risk.

(iii) **Temperature and Humidity:** The survival of BW agents is best assured by conditions of low temperatures and high humidity.

(iv) **Atmospheric Pollution:** Because of its chemical nature, atmospheric pollution has an adverse effect on BW agent.

(v) **Sunlight:** Most microorganisms are killed by exposure to ultra- violet light (sunlight); spores are an exception. BW attacks are therefore more likely at night. The appearance of sunlight could be used to limit the spread of the attack.

(vi) **Precipitation:** As the BW agents tend to have very small particle size, they are unlikely to be washed out of the atmosphere by rain and snow.

Note

Intext Questions 13.2

1. Fill in the blanks

   (a) The BW agents are drawn from four primary groups of organisms called (i) _____ (ii) _____ (iii) _____ (iv) _____.

   (b) _____ is found in a certain group of blood sucking insects, such as fleas, mites, lice and ticks.

   (c) Incubation period is normally not less than _____ hours.

   (d) Certain bacteria, under unfavourable conditions, undergo change into a state of inactiveness and are called _____.

2. List the essential characteristics for selection of any two BW agent.

13.3 Means of Delivery of BW Agents and their Routes of Entry into Human Body

13.3.1 Delivery

The BW agents may be delivered in a liquid medium called microorganism 'soup' or as an aerosol. The liquid medium protects the agent from excessive atmospheric drying, provides a degree of nutrition to the agent while being delivered to the target and protects the agent during the transition from liquid to aerosol state. The various modes of delivery of BW agents are:-

(a) **Vectors:** The use of animals or insects, known as 'vectors' is used for the delivery of microorganisms. However, in a BW attack, vectors cannot be relied upon to behave in a predictable and concerted manner.

(b) **Explosive Munitions:** Explosive munitions normally consist of a small explosive device, which is surrounded by the BW agent filled and enclosed in a thin metal or plastic case. Each munition forms a bomblet within a full sized bomb or artillery round. The bomblets are designed to disperse over a wide area when released. On impact, the device explodes and disseminates the agent in an aerosol suspension. The heat and shock of the explosion usually kills some of the micro-organisms.

(c) **Generators:** Biological agent generators normally consist of a container that has a source of pressure, which replaces the explosives charge. When the generator is activated, the pressure forces the agent through the nozzle device and creates an aerosol. The generator does not kill as many of the organisms as an explosive bomblet and is relatively quiet in operation.

Note

(d) Spray Tanks: Aircraft can carry spray tanks containing a large quantity of BW agent and are capable of producing effective aerosol over extremely large areas. The working of spray tanks is like generators to create the aerosol.

13.3.2 Routes of Entry

To cause disease, the BW agent has to penetrate into the human body. This can happen through the skin and eyes, by eating and drinking and/or by breathing.

(a) Skin: Penetration through the skin and mucous membranes may occur, particularly if the surface is damaged. The NBC IPE (Individual Protective Equipment) affords some amount of protection.

(b) Digestive Tract: The digestive tract provides a route of entry for contaminated food and drink. This route has some limitations like the digestive process destroys many BW agents, chlorination and water treatment destroys a majority of BW agents, cooking at high temperature kills almost all microorganisms.

(c) Respiratory Route: The breathing or respiratory route is the most significant and widely used. In this method, the infective dose required may be smaller and the onset of symptoms more rapid than normal.

Intext Questions 13.3

1. Fill in the blanks.
   (a) The use of animals or insects, known as _____ is used for the delivery of micro-organisms.
   (b) The _____ route is the most significant and widely used for entry of biological agents.
   (c) Aircraft carry _____ containing a large quantity of BW agent and are capable of producing effective aerosol over extremely large areas.
2. Name the various routes of entry of BW agent into the human body.

What You Have Learnt

The lesson on Biological warfare has taught you the basic aspects of this type of warfare. Some important highlights of the lesson are as follows:-

- The basic terms and definitions used in the study of biological warfare;
- Types, Essential Characteristics and Selection of BW Agents; The microorganisms such as virus, rickettsia that are used as agents;
- Essential Characteristics of BW Agents and their selection for use in battle;

Note

- The means of delivery of biological warfare agents and their routes of entry into human body.

Terminal Exercises

1. Explain the following:
   (a) Biological Agent
   (b) Aerosol
   (c) Bacteria as biological agents
2. What is meant by the Sensitivity to Environment of biological agents?
3. Explain the various delivery methods of BW agent.

Answers to Intext Questions

13.1

1. (a) small particles (liquid or solid) in air like mist and smoke.
   (b) Micro organism which causes disease in men, plants or animals.
2. Toxins are metabolic products of bacteria. They cause poisoning of organism.

13.2

1. (a) Bacteria, Rickettsia, Virus and Fungi.
   (b) Rickettsia
   (c) 24
   (d) Spores
2. (i) Infectivity (ii) Virulence (iii) Incubation
   (iv) Trans missibility (v) Lethality

13.3

1. (a) Vectors
   (b) Breathing or respiratory
   (c) Spray tanks
2. (i) Skin (ii) Digestive Tract (iii) Respiratory

Note

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14

CHEMICAL WARFARE

After learning about Nuclear and Biological warfare, lets now understand Chemical warfare. Chemical warfare (CW) involves the use of toxic properties of chemical substances as weapons. Chemical agents are inorganic substances used in warfare to attack the organs of the human body in order to prevent the human body from functioning at all or to hinder its normal functioning. The results are usually disabling to a varying degree, or fatal. However, with proper protective equipment, training, and decontamination measures, the primary effects of chemical weapons can be overcome.

As per UN conventions, use of chemical weapons is banned. In recent incidents in Syria, chemical weapons affected a number of civilians. Even though there is a convention and ban on its use, chemical weapons can be used by countries. Therefore, it is important that we learn about chemical weapons and means of defence against it.

Objectives

After studying this lesson, you will be able to:

- classify the chemical agents on the basis of criteria and types;
- know the factors on which the duration of effectiveness depends;
- explain the types of chemical agents based on their effectiveness;
- identify the effects of chemical agents on the body;
- explain the characteristics and symptoms of agents like Merue agents, Blister agents, Blood agents and choking agents;
- take protective measures against the various main groups of chemical agents and
- appreciate the requirements of a good chemical warfare agent.

14.1 Types of Chemical Agents

Chemical warfare includes the use of toxic chemical compounds in warfare as also the methods of combating such agents. Chemical warfare is as dreadful as nuclear warfare.

It is imperative for the modern soldier to be able to understand the hazard of chemical weapons and the protective measures required to be able to survive in such an environment to be able to continue fighting effectively. The capability to wage chemical warfare is well within the means of several nations that cannot afford a nuclear armory and this poses a serious threat.

14.1.1 Types of Chemical Agents

Chemical agents are classified according to the following criteria: -

(a) Military use and Effects on the body

(b) Duration of effectiveness.

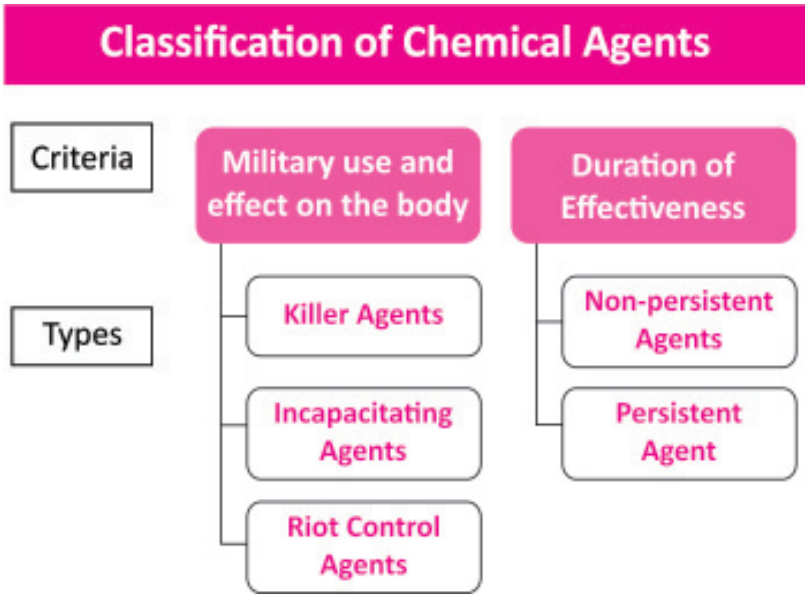


Table 14.1 - Classification of Chemical Agents

14.2 Duration of Effectiveness

The duration of effectiveness, that is the time for which the effects lasts, depends on many factors such as: -

(a) The physical characteristics of the agent.

(b) The amount of agent delivered and its physical state.

(c) The weapon system used.

(d) The weather in the target area at the time of the attack and afterwards.

Note

14.3 Types of Chemical Agents Based on Effectiveness

Have you seen dew on grass or leaves in the morning? The dew is water droplet, which forms on leaves due to condensation in the atmosphere. Consider the dew drops as chemical agents. Then some chemicals disappear quickly like the dewdrop. These agents are called non-persistent agents. Other chemical agents remain in the atmosphere and on the objects where it was sprayed. These agents are called persistent agents. From the point of view of duration of effect the agents may be classified as follows: -

(a) **Non-Persistent Agents:** These agents disperse rapidly after release and present an immediate short duration hazard e.g. G agents (Nerve Agent), Hydrogen Cyanide (Blood Agent) etc.

(b) **Persistent Agent:** These agents continue to present a hazard for a considerable period after delivery by remaining a liquid contact hazard and by continuing to produce vapour by the evaporation of the liquid e.g. V agents (Nerve Agents), Sulphur Mustard (Blister Agent).

14.4 Effects on the Body

The third method of classification is to group agents by their action and effect on the body. Such groups are as follows:

(a) **Killer Agents:** These agents are used to kill humans and are deadly/ fatal. These are further classified as:-

(i) **Nerve Agent:** These interfere with the nervous system and thus disrupt essential body functions like breathing, muscular control and vision. E.g., TABUN (GA), SARIN (GB), SOMAN (GD) and V agents.

(ii) **Blister Agents:** These agents cause inflammation, blistering of the skin and superficial destruction of contaminated internal tissue, e.g., the lining of the breathing passage. Although classified as killers, blister agents do not cause death except in extreme cases. Examples are Mustard Gas (HD), Nitrogen, Mustard (HN 1 to HN 3) and Lewisite (L).

(iii) **Blood Agents:** These prevent body tissue from using the oxygen in the blood. E.g., Hydrogen Cyanide (AC), Cyanogen Chloride (CK) and Arsine (SA).

(iv) **Choking Agents:** These attack the breathing passage and lungs. E.g., Phosgene(CG), Di-phosgene (DP) and Chloropicrin (PS).

(b) **Incapacitating Agents:** These agents cause temporary incapacitation of individuals. They affect the normal human body functioning for a short duration.

Note

They are further classified as:-

(i) **Nose (Vomiting) Agents:** These cause irritation in the nose and throat, which can lead to vomiting.

(ii) **Mental Incapacitates:** These cause temporary mental disturbances, usually preceded or accompanied by physical effects.

(iii) **Physical Incapacitates:** These cause temporary effects such as fainting or paralysis, unaccompanied by mental effects.

(c) **Riot Control Agents:** Agents selected and approved for use when giving aid to the civil power and in similar operations. These are mostly the incapacitating agents such as CS. These are also referred to as 'tear' agents. These cause irritation of the eyes, flow of tears and a stinging sensation.

Intext Questions 14.1

1. Fill in the blanks.
   (a) The criteria used to classify the chemical agents are _____, _____ and _____.
   (b) _____ agents are used when giving aid to the civil power and in similar operations.
   (c) From the point of view of duration of effect, the agents may be classified as _____ and _____.
   (d) The most dangerous of the lethal chemical agents are the _____ agents.
   (e) _____ agents cause inflammation, blistering of the skin and superficial destruction of contaminated internal tissue, e.g., the lining of the breathing passage.
2. Differentiate between persistent and non-persistent chemical agents.

14.5 Characteristics of Agents

The main groups i.e., the Nerve, Blister, Blood, Choking and Incapacitating (Vomiting Agent) are discussed in the succeeding paragraphs.

I. Nerve Agents: The most dangerous of the lethal chemical agents are the nerve agents. These act in the body by blocking the enzyme system, which is concerned with the nervous control of the brain. The known agents are classified as either V (Persistent) or G (non-persistent) agents.

(a) V Agents: The persistent nerve V agents are colourless and relatively in

Note

volatile liquids, which slowly emit an odorless toxic vapour. Their viscosity is same as that of a light lubricating oil and their persistency is such as to make them extremely hazardous as a liquid or as an aerosol, which can be inhaled, absorbed through the skin or swallowed with contaminated food or water. The standard persistent agent is VX.

(b) **G Agents:** The non-persistent G agents, which are also colourless and odorless, are in contrast to the V agents, highly volatile and they vaporize rapidly to form a highly toxic cloud. Their viscosity is somewhat same as that of petrol and their volatility makes them generally unsuitable for dissemination in liquid or aerosol form. They are therefore diffused as vapours, which attack through the eyes and respiratory tract, but may also penetrate normal clothing to attack through the skin. Although vapour is the most likely hazard, liquid G Agents coming directly in contact with the skin are also lethal. The standard non-persistent agent is GB.

(c) **Symptoms of Nerve Agent Poisoning;** The order of the onset of the symptoms of nerve agent poisoning varies with the type of attack. With vapours, dimness of vision with pinpointed pupil occurs early; when absorbed through the skin, nausea and vomiting occur in the early stages. Later, irrespective of type of attack and unless preventive measures are taken, convulsions and paralysis set in, followed by eventual death. Following large doses, death may occur within minutes.

II. **Blister Agents:** Mustard (HD) is used as the principal blister agent.It gives off an invisible vapour having a slight but characteristic odour of garlic. Mustard (HD) can be used in liquid or vapour form. It can seriously damage the eyes, respiratory passage and skin if these are unprotected. Liquid mustard will penetrate normal clothing in a few minutes; vapour takes considerably longer time. Liquid mustard on the skin causes large blisters after about eight hours, whereas the vapour causes small blisters in the form of a rash, which takes much longer, sometimes even days to develop. Internal injuries will also result due to the consumption of contaminated food and drink. Mustard in field concentrations is normally lethal and a high casualty producer. It is normally disseminated as a liquid or aerosol and attacks through both the skin and the respiratory tract.

Symptoms of Blister Agents :

These vary with time and are described below: -

(a) In the 20-60 minutes after exposure, nausea, vomiting and burning and watering of the eye have occasionally been observed.

(b) In the next two to six hours, nausea, vomiting, headache, inflammation of

Note

the eyes, excessive watering from the eyes, reddening of face and neck, soreness of throat, increase in pulse and respiration are observed.

(c) After 24 hours of exposure, there is a general increase in severity of above effects. Inflammation of inner thighs, axilla, genitalia, tocks, followed by onset of blister formation - blisters are large, filled with yellow fluid and may be pendulous.

(d) After 48 hours, the blistering becomes more marked. Swelling of genitalia, bronchitis, expectoration of mucous and dead cells with increased temperature is observed.

III. Blood Agents: Blood agents are mostly used as vapours and the usual entry route is through the respiratory system. They produce their effects by interfering with some of the vital body functions. In the liquid form the skin can absorb them. Hydrocyanic Acid (AC) and Cyanogen Chloride (CK) are the important agents in this group. Blood agents affect the respiratory system causing inflammatory changes leading to pulmonary edema and stop of breath besides local effects such as irritation of the eyes.

Symptoms of Blood Agents :Inhalation of AC or CK in sufficient quantity may produce symptoms within seconds and death within minutes. Acute poisoning is characterized by: -

(a) Dizziness.

(b) Headache.

(c) Palpitation.

(d) Anxiety.

(e) Ataxia, paralysis and coma.

(f) Cardiovascular collapse, respiratory arrest, convulsions and metabolic acidosis are seen in severe cases.

IV. Choking Agents: These are chemical agents, which attack the lung tissues causing pulmonary edema. The most common choking agent is Phosgene, which is a non-persistent chemical agent. It is a colourless gas with a suffocating odour reminiscent of moldy hay. Phosgene is rapidly hydrolysed in water leading to the formation of hydrochloric acid, which is corrosive, affects lung tissues and damages the capillaries. This is followed by seepage of fluid into the air sacs, leading to pulmonary edema.

Symptoms of Choking Agents:

The symptoms are delayed and initially no symptoms are observed for two to

Note

three hours. The effects of agent start showing as follows: -

(a) A mild irritation of eyes (lachrymation)

(b) Soreness in the throat.

(c) Coughing, tightness of chest.

(d) Nausea, vomiting and headache.

(e) There is a symptomless period before pulmonary odema sets, which is indicated by: -

(i) Uneasiness, cough with white and yellow sputum.

(ii) Nausea, vomiting, gastric pain.

(iii) Rapid breathing and cardiac failure.

(f) The victim collapses and suffers spasmodic convulsions. Severe cases show unconsciousness followed by death.

14.6 Protective Measures against Nerve Agents, Blister Agents, Blood Agents and Choking Agents

The respirator gives complete protection to the eyes, nose, throat and lungs against the vapour. Holding the breath till the mask is donned is also effective. The IPE/PPE made up of non-permeable material provides some amount of protection against entry through the skin. If contaminated by the liquid, one can avoid becoming a casualty by carrying out personal decontamination drill. Decontamination of affected equipment or ground by weathering is a slow process and so chemical decontaminants should be used.

I. **Incapacitating Agent:** The non-lethal, incapacitating psycho-chemicals produce physical or mental effects of sufficient severity, to prevent men from carrying out their normal tasks. The duration of effect could be as brief as several minutes, although it could last for several days in certain cases. Recovery is complete and there are normally no after effects. The respirator affords full protection against the incapacitating agents.

II. **Riot Control Agents:** CS Agent is mostly used as the riot control agent. It is a white crystalline solid, which is disseminated as an aerosol.This causes intense irritation of the eyes, accompanied by copious tears, a stinging of the skin and a burning sensation in the throat and lungs, with pain and difficulty in breathing in more severe cases. The effects are immediate and although they disappear rapidly in fresh air. CS agent attacks through the eyes and respiratory tract, but is a truly non-lethal agent. The respirator or gas mask provides complete protection against such agents.

14.6.1 Mode of Delivery of Chemical Agents

The CW agents may be disseminated in one or more of the following forms: -

(a) Liquid droplets or spray, like rain.

(b) Liquid aerosols, like a fine mist, small enough to be inhaled.

(c) Very small particles of solids, like smoke.

(d) Vapour or true gas.

14.7 Requirements of a Good Chemical Warfare Agent

A CW Agent must possess following requirements to be effective:-

(a) **High Toxicity:** The extent to which a chemical agent affects a person depends upon the toxicity of the agent and the time to which he is exposed. Hence a suitable chemical agent must have high toxicity. It must also, preferably, affect more than one organ of the human body simultaneously.

(b) **Quick toAct:** Since the degree of injury also depends upon the time of exposure, the agent must not only be highly toxic but should also be fast acting.

(c) **Non-perceptible to Human Senses:** The target population must not realise that they have been subjected to a chemical attack.

(d) **Non-availability of Antidote:** The enemy should not have an effective antidote.

(e) **Controllable Dissemination:** The agent should be capable of being delivered by more than one delivery system and disseminated at the target in more ways than one, on target or off target, in vapour or aerosol form.

(f) **Volatility and Persistency:** Highly volatile agents are generally non- persistent. If persistent agents are required, the chemical must not be volatile.

(g) **Capacity to Penetrate:** It should enter the human body through inhalation or skin ingestion.

(h) **Non-detectable:** It must be difficult to detect.

(j) Availability of raw materials and economy and ease of manufacture.

(l) Stability in storage.

(m) **Purity:** The final product must be a pure substance since impurities would degrade its effectiveness.

(n) **Detonation Stability:** The agent must not be destroyed by the heat and blast of detonation.

Note

(o) **Suitable Vapour Pressure:** The chemical must be capable of being released at high pressure.

(p) **Ability to be Aerosolized:** Aerosols are very fine droplets in the air, small enough to be inhaled or to penetrate through clothing and skin.

(q) **Miscibility and Solubility:** Miscibility is the ability of an agent to be mixed with other compounds whereas solubility denotes its ability to be dissolved for the preparation of a solution.

Intext Questions 14.2

1. What are the protective measures against the CW agents? Suggest any three measures.
2. Mention any five basic requirements of a good chemical warfare agent?
3. Write two symptoms each of blood agents and choking agents.

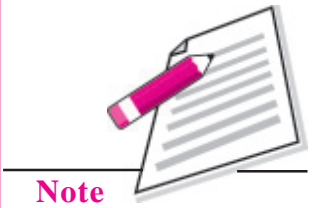
ACTIVITY 14.1

Watch the "Chemical Warfare: Nerve Agents 1964 US Army Training Film" at https://www.youtube.com/watch?v=vsfUEgoFA6o.

What You Have Learnt

In this lesson you have learnt about the term Chemical Warfare. Important points of the lesson are as follows:-

- The science behind chemical agents wherein, types of Chemical Agents, Characteristics and Effects were analysed;
- The military use of the chemical agents in which, the military classification, duration of eeffectiveness and their classification based on Effectiveness;
- Effects on the body when agents such as Blister agent, Nerve agents come in contact with the human body and protective measures to be taken;
- The military requirements of a chemical warfare agent and the mode of delivery.



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Terminal Exercises

1. Write short notes on
   (a) Persistent and Non Persistent Agents
   (b) Incapacitating Agent
   (c) Nerve Agent
   (d) Riot control Agents
2. Explain the factors that affect the duration of effectiveness of a chemical agent?
3. What are the modes of delivery of chemical agents?
4. What are the symptoms if Blister agents are used?
5. Classify the killer agents on the basis of their action and effect. Also give examples of each.

Answers to Intext Questions

14.1

1. (a) Military use, Duration of effectiveness and Effects on the body.
   (b) Riot control Agents
   (c) Non-Persistent Agents and Persistent Agent.
   (d) Nerve agents.
   (e) Blister agents
2. Persistent agents continue to remain in the area for a long time. They are hazardous when touched. Non persistent agents disperse quickly and are effective only for a short duration of time.

14.2

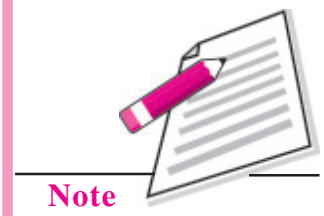
1. Gas Mask or Respirator, Protective clothing and personal Decontamination.
2. (a) High toxity
   (b) Quick to act
   (c) Capacity to penetrate
   (d) Detonation stability

Note

(e) Miscibility and solubility

3. (a) Blood Agents: Dizziness, headache, palpitation, anxiety

(b) Choking Agents: A mild irritation of eyes, coughing tightness of chest, soarness in the throat, vomiting & headache



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15

CYBER WARFARE

In the last three lessons we have learnt about Nuclear, Biological and Chemical Warfares. With the advent of information technology and increased use of cyber space there is a new form of warfare that is being extensively used by adversaries and that is cyber warfare.

Cyber war relates to the use of computer technology to disrupt the activities of a state or organization. It is the deliberate attacking of information systems for strategic or military purposes. It implies disrupting or destroying information and communication system of an adversary, and trying to know everything about an adversary, while keeping the adversary from knowing much about oneself.

Cyber warfare involves both offensive and defensive operations pertaining to the threat of cyber attacks, for espionage and sabotage. There has been controversy over whether such activities can be called "war". Nevertheless, nations have been developing their capabilities and engaged in cyber warfare either as an aggressor or defendant, or both.

Objectives

After studying this lesson, you will be able to:

- explain the definition of Cyber Warfare;
- recognise the types of cyber threats;
- describe the types of cybercrime, cyber attackers and cyber weapons;
- explain cyber penetration and the remedial measures to be taken and
- explain the cyber security policy.

15.1 Definition of Cyber warfare

Cyber warfare has been defined as "actions by a nation-state to penetrate another nation's computers or networks for the purposes of causing damage or disruption". Other definitions also include non-state actors, such as terrorist groups, companies,

Note

political or ideological extremist groups, hacktivists, and transnational criminal organizations. Some governments have made it an integral part of their overall military strategy, with some having invested heavily in cyber warfare capabilities.

Cyber warfare is essentially a formalized version of penetration testing in which a government entity has established it as a warfighting capability. This capability uses the same set of penetration testing methodologies but applies them in a strategical way to

(a) Prevent cyber-attacks against critical infrastructure

(b) Reduce national vulnerability to cyber attacks

(c) Minimize damage and recovery time from cyber attacks

Offensive operations are also part of these national level strategies for officially declared wars as well as non contact war even when nations are not at war.

Cyber Crime: A crime committed where the use or knowledge of computer is required to cause damage is Cyber Crime.

Cyber Security: Cyber Security is the evolution of policies and procedures to protect own information and information system.

15.2 Types of Threat

(a) **Cyber attacks:** These are the intrusions where immediate damage or disruption caused are the main concern.

(b) **Cyber Espionage:** Cyber espionage is an act of intrusion which can provide the information needed . Traditional espionage is not an act of war, nor is cyber-espionage, and both are generally assumed to be ongoing between major powers. Despite this assumption, some incidents can cause serious tensions between nations and are often described as "attacks". For example

(i) Massive spying by the US on many countries, revealed by Edward Snowden.

(ii) After the NSA's spying on Germany's Chancellor Angela Merkel was revealed, the Chancellor compared the NSA with the Stasi (the official state security service of the German Democratic Republic).

(iii) The NSA recording nearly every cell phone conversation in the Bahamas, without the Bahamian government's permission, and similar programs in Kenya, the Philippines, Mexico and Afghanistan.

(iv) The "Titan Rain" probes American defence contractors computer systems since 2003.

(v) The Office of Personnel Management data breach, in the US, widely attributed to China.

(c) **Cyber Sabotage:** Computers and satellites that coordinate other activities are vulnerable components of a system and could lead to the disruption of equipment. Compromise of military systems, such as command and control systems could lead to their interception or malicious replacement. Power, water, fuel, communications, and transportation infrastructure all may be vulnerable to disruption. The civilian realm is also at risk, some potential targets include the electric power grid, trains, or the stock exchanges. Non-state actors can play as large a part in the cyberwar space as state actors, which lead to dangerous, sometimes disastrous, consequences. Small groups of highly skilled malware developers are able to as effectively impact global politics and cyber warfare as large governmental agencies.

(d) **Cyber Propaganda:** The aim of propaganda is to control information and influence public opinion. Cyber propaganda is an effort to control information in whatever form it takes, and influence public opinion. It is a form of psychological warfare, except it uses social media, fake news websites and other digital means. Propaganda is the deliberate, systematic attempt to shape perceptions, manipulate cognitions, and direct behavior to achieve a response that furthers the desired intent of the propagandist.

The internet is a phenomenal means of communication. People can get their message across to a huge audience. Terrorist organizations use this medium to effectively to brainwash people and also recreist potential members.

Intext Questions 15.1

1. Fill in the blanks.
   (a) _____ is the evolution of policies and procedures to protect own information and information system.
   (b) The aim of _____is to control information and influence public opinion.
2. Define cyber warfare.
3. What is meant by Cyber Crime and Cyber Security?
4. Mention the form types of cyber threats.

15.3 Cyber crime, Cyber Attackers and Cyber Weapons

15.3.1. Emergence of Cyber Crime

Let's take a look at the causes and how Cyber Crime emerges:-

(a) In this world of network centric environment there has been a phenomenal growth

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of internet usage; this has made our cyber space vulnerable to various crimes.

(b) Advancement in the field of electronics and technology has made common the use of sophisticated computer tools not only for us but also for our adversaries.

(c) There is a tendency where victims of cyber crimes hesitate to own upto attacks. This may be to prevent spread of rumours or damage to their reputations eg. banks etc.

(d) We are dramatically becoming more and more dependent on ecommerce and networked based solutions to optimise our resources; this in turn has made us vulnerable to cybercrime.

15.3.2 Types of Cyber Crime

In todays world there are as many cyber crimes as man's fertile and imaginative brain can think of Cybercrimes can broadly be categorised as:

(a) **Fraud and Forgery:** This is primarily evident in the field of commerce and economy.

(b) **Damage to or Modification of Computer Data or Programme:** This can be for private sector, public sector or for defence establish, such as ATC & Radar system.

(c) **Unauthorised Access to Computer System and Surveillance:** This is commonly seen in commercial websites, e.g., Phishing, spywares and data spoofing.

(d) **Unauthorised Reproduction of Computer Programmes:** These are the cases of piracy.

15.3.3 Cyber Attacker

Cyber attacker aims at causing criminal threats or to cause national security threats. Some cyber attackers are -

(a) **Hacker:** A computer user who intends to gain unauthorised access to a computer system.

(b) **Crackers:** A cracker is a hacker with criminal intent, who maliciously sabotages computers, steals information located on secure computers and cause disruption to the networks for personal or political motives.

(c) **Insider:** A disgruntled insider (a current or former employee) of an organisation is one of the principal sources of cybercrime. An insider's knowledge of the organisation's network often allows them to gain unrestricted access to cause damage to the information system or to steal sensitive data.

(d) **Terrorist:** Cyber attackers who use IT and internet to plan & execute their

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activities, raise funds, spread propaganda, shut down critical national infrastructures (such as energy, transportation or government operations) for the purpose of forcing or intimidating a government or civil population.

(e) **Foreign Intelligence Services:** Foreign intelligence surveillance who use cyber tools as part of their espionage tradecraft for acquiring sensitive information about their adversary.

15.3.4 Cyber Weapons

So far, you have understood what is cybercrime. But just as in all other crimes, there are certain weapons used to commit these crimes. Let us find out what they are.

(a) **Viruses and Worms:** It is very commonly heard or noticed term in our day to day computer life. These are the codes that execute within host program. Whenever anything goes wrong we don't hesitate to blame viruses for the matter. But something more complex like Worms (programs executed independently) are also used.

(b) **Trojan Horses:** These are programs that work in disguise. Trojan Horses are unauthenticated program contained in a legitimate program which performs functions unknown to the user. Likely places for Trojan Horses to attack are:-

(i) OS.

(ii) Software downloaded from internet.

(c) **Logic /Knowledge Bombs:** These are hidden functions that becomes active when triggered.

(d) **Knobots:** Also known as Knowledge Robots, they keep the processed data and keep storing the knowledge.

(e) **Adware:** Adware is a programme that can be embedded within useful programmes. These popup while using the computer they are embedded in and have a lot of nuisance value.

(f) **Spyware:** Spyware is also a programme that is embedded with a useful programme. However, they are generally programmed to collect information such as user's web surfing habit /preferences and e-mail. The illegal part of the activity is that all the activity occurs without the users consent.

Intext Questions 15.2

1. Fill in the blanks.

(a) Knowledge Robots are known as_____.

(b) Computer user who intends to gain unauthorised access to a computer

Note

system is a _____.

(c) A _____is a hacker with criminal intent, who maliciously sabotage computer, steal information located on secure computers.

(d) _____ are programs that work in disguise.

(e) Adware and spyware are one and the same (True/False)

2. Mention the types of cybercrime.

3. List the various types of cyber weapons.

15.4 Cyber Penetration, Remedial Measures & National Cyber Security Policy

15.5.1 Cyber Penetration : Modus Operandi

How do our adversaries operate to penetrate into our Cyber Space? They send out numerous e- mails to internet users for cyber hacking. Generally these mails have spywares which are detrimental to the host computers and result in sharing /retrieval of data stored on the hard disk. Sometimes it also leads to crashing the computer. These spywares could facilitate remote administration of the host computer.

Whenever a hacker penetrates a computer, he would attempt to install a spyware that will give him access to that computer at his will. He also may install malicious programme which would collect information from the computer and through internet, down load all files and particular IP address. An antivirus programme alone is not good enough to detect all such rogue programs, because while viruses are designed to propagate openly, spywares are designed to propagate by stealth. So the technologies required to detect viruses and spyware are also different.

15.5.2 Indications

How can I get indication that my computer is Infected? There are very apparent indications which show your computer is infected. Be vigilant and look for the following:

(a) Poor system performance.

(b) Abnormal system behaviour e.g., system restarts or hangs frequently.

(c) Unknown services are running.

(d) Crashing of applications.

(e) Change in file extensions or contents.

(f) Hard Disk is busy or its light glows continuously.

Note

15.5.3 Remedial Measures

Although you may not be able to catch the indications of your computer being infected, there are certain precautions you can observe to keep your systems safe from attack. These are -

(a) **Install Latest Patches for OS:** Install latest patches for the OS and application being used from a trusted website only. A good Firewall would act as the first line of defence to alert the user if any application / programme is trying to connect to his PC over the internet. However, a firewall has the following limitations:-

(i) It cannot protect your computer against malicious insiders i.e., spoofing attacks.

(ii) It cannot protect against connections that don't go through OS (i.e., backdoors).

(iii) It cannot protect against viruses which are e-mail borne.

(b) **Install a Good Internet Security Suite:** Nowadays various Internet security suites are available in the market. They combine the functionality of antivirus, antispyware, firewall, parental controls etc. Alternately, as a user, you must install an antivirus as well as an antispyware programme and must download latest virus signature periodically (preferably daily).

15.5 CERT and National Cyber Security Policy

The Department of Information Technology created the Indian Computer Emergency Response Team (CERT-In) in 2004 to thwart cyber-attacks in India. That year, there were 23 reported cyber security breaches. In 2011, there were 13,301. In response, the government created a new subdivision, the National Critical Information Infrastructure Protection Centre (NCIIPC) to thwart attacks against energy, transport, banking, telecom, defence, space and other sensitive areas. India had no cyber security policy before 2013. The government unveiled a National Cyber Security Policy 2013 on 2nd July 2013. The National Cyber Security Policy is a policy framework by Department of Electronics and Information Technology.

The Cyber Security Policy aims at protection of information infrastructure in cyberspace, reduce vulnerabilities, build capabilities to prevent and respond to cyber threats and minimize damage from cyber incidents. This is achieved through a combination of institutional structures, people, process, technology and cooperation. The objective of this policy is to create a secure cyberspace ecosystem and strengthen the regulatory framework.

The Computer Emergency Response Team (CERT-In) has been designated to act as

a nodal agency for coordination of crisis management efforts. CERT-In also acts as an umbrella organization for coordination actions and operationalization of sectoral CERTs.

Intext Questions 15.3

1. Expand the following-
   (a) CERT
   (b) ICT
   (c) NCIIPC
2. What are the indications of the computer system being infected?
3. What are the limitations of firewall?
4. Why is a good firewall called the first line of defence?

ACTIVITY 15.1

Watch the documentary "Zero Days" at https://topdocumentaryfilms.com/zero-days/

What You Have Learnt

This lesson in Cyber warfare has given you an insight into the following:

- Certain definitions connected with cyber warfare;
- Types of threat which include cyber espionage, cyber attack and cyber sabotage and cyber propaganda;
- You have also studied about types of Cybercrime, Cyber Attackers and Cyber Weapons
- Cyber Penetration and indication that give us an idea that our computer is infected. Remedial measures have to be under taken to prevent cyber attacks.

Terminal Exercises

1. Write short notes on
   (a) Cyberwarfare.
   (b) Cyber Espionage.
   (c) Cyber Sabotage.
   (d) CERT and National Cyber Security Policy.
   (e) Remedial measures against cyber penetration.

2. Differentiate between adware and spyware.
3. What is cyber propaganda?
4. Explain the emergence of cybercrimes and measures to check them.
5. Explain the National Cyber Security Policy.

Answers to Intext Questions

15.1

1. (a) Cyber Security.
   (b) Propaganda
2. Cyber warfare has been defined "actions by a nation-state to penetrate another nations computers or network of or the purpose of causing damage or destruction.
3. Cyber crime is committed where the use or knowledge of computer is required to cause damage.
4. (i) Cyber attacks
   (ii) Cyber espionage
   (iii) Cyber sabotage
   (iv) Cyber propaganda

15.2

1. (a) Knobots.
   (b) Hacker.
   (c) Cracker
   (d) Trojan Horses.
   (e) False
2. (i) Fraud and Forgery
   (ii) Damage to or modification of computer
3. Refer to text 15.4

15.3

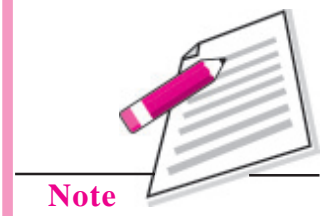
1. (a) Computer Emergency Response Team (CERT)
   (b) Information and Communication Technology (ICT)
   (c) National Critical Information Infrastructure Protection Centre (NCIIPC)

Note

2. Refer to text 15.5.2

3. Refer to text 15.5.3 (a)

4. Because it alerts the user if any application/programme is trying to connect to his PC over the internet.



Note

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16

ARMED FORCES IN PEACE KEEPING

In the previous module we have learnt about the non-conventional warfare and weapons of mass destruction. The Indian Armed forces, apart from its regular duties of protecting the nation from external threat, are also involved in various other duties. Some of them are peace keeping, humanitarian assistance and disaster relief, and aid to the local government in handling internal affairs.

Peace keeping refers to activities intended to create conditions that favour lasting peace in a war torn country. Peace keeping missions prevent the risk of renewed conflict. United Nation (UN) is the largest international organization that is committed to establishment of world peace. The peacekeepers monitor and observe peace processes in post-conflict areas. They may also assist ex-combatants in implementing peace agreement commitments that they have undertaken. Such assistance may come in many forms, including confidence-building measures, power-sharing arrangements, electoral support, strengthening the rule of law, and economic and social development. India is one of the largest troops contributor to the United Nations for peacekeeping missions.

Objectives

After studying this lesson, you will be able to:

- define peace keeping and types of peace keeping operations;
- appreciate the contents of the charter of UN peace keeping;
- explain the principles of peace keeping and
- describe the contribution of India Armed Forces in UN peace keeping.

16.1 Definition of Peace keeping Operations

" Peacekeeping" refers to activities intended to create conditions that favour lasting peace. Research has found that peacekeeping reduces civilian and battlefield deaths

Note

and reduces the risk of renewed warfare. Peacekeeping by the United Nations is a role held by the Department of Peacekeeping Operations. Peacekeeping operations are defined as ***"a unique and dynamic instrument developed by the organization as a way to help countries torn by conflict to create the conditions for lasting peace."***

It is distinguished from peacebuilding, peacemaking, and peace enforcement although the United Nations does acknowledge that all activities are "mutually reinforcing" and that overlap between them is frequent in practice.

16.1.1 Types of Peacekeeping Operations

There are various types of operations within peace keeping. The UN peacekeeping is governed by Chapter VI and Chapter VII of the UN Charter. Chapter VI missions are consent based, therefore they require the consent of the warring factions involved in order to operate. Should they lose that consent, Peacekeepers would be compelled to withdraw.

Chapter VII missions, by contrast, do not require consent, though they may have it. If consent is lost at any point, Chapter VII missions would not be required to withdraw. Chapter VII mission are peace enforcement missions.

Peace-Enforcement

Peace-enforcement meant to act with or without the consent of the belligerents in order to ensure any treaty or cease-fire mandated by the United Nations Security Council is maintained. This is done primarily under Chapter VII of the UN Charter and the forces are generally heavily armed as opposed to the unarmed, or lightly-armed personnel frequently deployed as observers.

Peace-Making

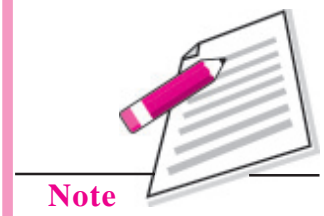
Peace-making intends to compel belligerents to seek a peaceful settlement for their differences via mediation and other forms of negotiation provided by the UN under Chapter VI of the UN Charter.

Peace-Keeping

Peace-keeping is deployment of a lightly-armed United Nations presence in the field with the consent of the belligerents involved in order to build confidence and monitor agreements between concerned parties. Additionally, diplomats continue to work toward comprehensive and lasting peace, or for the implementation of an agreed upon peace.

16.1.2 Post-Conflict Reconstruction

Post-Conflict Reconstruction is intended to develop economic and social cooperation to mend relations between the belligerents. Social, political, and economic infrastructure



would ideally prevent potential violence and conflict in the future and help to contribute to a lasting and robust peace.

Intext Questions 16.1

1. Define Peace keeping.
2. What is post conflict reconstruction?
3. Fill in the blanks:
   (i) _____ is intended to develop economic and social cooperation.
   (ii) For peace enforcement, the forces are generally _____ as opposed to the frequently deployed forces as observers.
   (iii) Peace keeping force is deployed in order to _____ and _____ agreements.

16.2 The Charter of the United Nations Peace keeping

The Charter of the United Nations was signed in San Francisco on 26 June 1945 and is the foundation document for all United Nations work. The United Nations was established to "save succeeding generations from the scourge of war" and one of its main purposes is to maintain international peace and security. Peacekeeping, although not explicitly provided for in the Charter, has evolved into one of the main tools used by the United Nations to achieve this purpose.

The Charter gives the United Nations Security Council, a primary responsibility for the maintenance of international peace and security. To fulfill this responsibility, the Security Council may adopt a range of measures, including peacekeeping operations. The legal basis for such action is found in Chapters VI, VII and VIII of the Charter.

While Chapter VI deals with the "Pacific Settlement of Disputes", Chapter VII contains provisions related to "Action with Respect to the Peace, Breaches of the Peace and Acts of Aggression".

Chapter VIII of the Charter also provides for the involvement of regional arrangements and agencies in the maintenance of international peace and security. United Nations peacekeeping operations have traditionally been associated with Chapter VI.

In recent years, the Security Council has adopted the practice of invoking Chapter VII of the Charter when authorizing the deployment of United Nations peacekeeping operations into volatile post conflict settings where the State is unable to maintain security and public order. The Security Council's invocation of Chapter VII in these

Note

situations provide the legal basis for its action and can be seen as a statement of firm political resolve.

16.3 Principles of Peacekeeping

There are three basic principles that define UN peacekeeping operations. These three principles are inter-related and mutually reinforcing:

(a) **Consent of the Parties:** UN peacekeeping operations are deployed with the consent of the main parties to the conflict. This requires a commitment by the parties to a political process. Their acceptance of a peacekeeping operation provides the UN with the necessary freedom of action, both political and physical, to carry out its mandated tasks.

The fact that the main parties have given their consent to the deployment of a United Nations peacekeeping operation does not necessarily imply or guarantee that there will also be consent at the local level due to internal differences/conflicts.

(b) **Impartiality:** Impartiality is crucial to maintain the consent and cooperation of the main parties and should not be confused with neutrality or inactivity.

A mission should not shy away from a rigorous application of the principle of impartiality for fear of misinterpretation or retaliation. Failure to do so may undermine the peacekeeping operation's credibility and legitimacy. It may lead to a withdrawal of consent by one or more of the parties.

(c) **Non-Use of Force Except in Self-Defence and Defence of the Mandate:** UN peacekeeping operations are not an enforcement tool. However, they may use force at the tactical level, with the authorization of the Security Council, if acting in self-defence and defence of the mandate. The Security Council may also authorize the use of force by UN peacekeepers to deter forceful attempts to disrupt the political process, protect civilians under imminent threat of physical attack, and/or assist the national authorities in maintaining law and order.

A UN peacekeeping operation should only use force as a measure of last resort. It should always be calibrated in a precise, proportional and appropriate manner, within the principle of the minimum force necessary to achieve the desired effect. The various factors that decide the measure of force to be applied include mission capability; public perceptions; humanitarian impact; force protection; safety and security of personnel; and the effect that such action will have on national and local level.

Intext Questions 16.2

1. Fill in the blanks.

(a) The legal basis for UN peacekeeping operations is found in chapter _____, _____ and ____ of the Charter.

(b) The principles of UN peacekeeping are _____ and_____.

(c) The three principles of UN peacekeeping are _____, _____ and _____.

2. When and where was the Charter of UN signed?

3. Mention any three factors that decide the measure of force to be applied in UN peacekeeping.

16.4 India Armed forces in UN Peacekeeping

As of 29 February 2016, 124 countries were contributing a total of 1,05,314 personnel to Peacekeeping Operations, with Ethiopia leading the tally (8,324), followed by India (7,695) and Bangladesh (7,525). So far India has taken part in 43 Peacekeeping missions with a total contribution exceeding 1,80,000 troops. Indian Peacekeepers have been lauded by the UN and host countries for their efforts in rebuilding the nations. The First Deployment of Indian Peacekeeping Operations was in the year 1950 in Korea.

16.4.1 Current Deployments

The Indian Armed Forces are currently undertaking the following UN Missions.

(a) **Lebanon (UNIFIL):** One infantry battalion group, Level II Hospital comprising 650 peacekeepers from all ranks and 23 staff officers till date, have been deployed since Dec 1998. The current situation in the Mission is tense and volatile due to the crisis in Syria.

(b) **Congo (MONUSCO):** Extended Chapter VII mandate with Augmented Infantry Brigade Group (four infantry battalions with level III Hospital), Army aviation contingent with utility helicopters along with a large number of military observers and SOs have been contributed since January 2005. In addition, two Formed Police Units (FPU) ex BSF and ITBP have also been deployed since 2009. MONUSCO's new mandate vide Resolution 2098 (2013) has been implemented with an Intervention Brigade provided by AU, deployed under UN Command.

(c) **Sudan and South Sudan (UNMIS/UNMISS):** Two Infantry Battalion groups, sector HQ, Engineer company, signal company, Level-II Hospital and a large number of military observers and staff officers (SOs) have been deployed since April 2005. The latest political developments in the Mission led to widespread

Note

inter-tribe violence and large displacement of locals. In the ensuing intra state conflict two Indian Peacekeepers lost their lives while ensuring protection of civilians. The current situation continues to be highly volatile.

(d) **Golan Heights (UNDOF):** A Logistics battalion with 190 personnel has been deployed to look after the logistics security of UNDOF since February 2006. Current crisis due to Syrian conflict has impacted the mission and exchange of fire between the Syrian Forces and the armed groups have put the Peacekeepers in grave danger.

(e) **Ivory Coast (UNOCI):** The mission has been supported by Indian staff officers (SOs) and military observers since its inception in April 2004.

(f) **Haiti (MINUSTAH):** Apart from three Indian Formed Police Unit (FPU) there, i.e. from CISF, CRPF and Assam Rifles, which have been successful, the mission has been supported by Indian Army staff officers since its inception in December 1997.

(g) **Liberia (UNMIL):** India has been contributing both male and female Formed Police Units from CRPF and its Specialized unit RAF in Liberia since April 2007. The Female Formed Police Unit (FPU) has especially become an inspiration for the women of the host nation and have become trendsetters for other such female FPUs across the globe.

Intext Questions 16.3

1. Fill in the blanks.
   (a) India has participated in _____ UN peacekeeping missions.
   (b) The first Indian UN deployment was in _____in 1950 where India sent paramedical troops and custodian forces.
2. Name the countries where these UN missions are operating.
   (a) UNIFIL
   (b) UNDOF
   (c) MONUSCO
   (d) UNOCI
   (e) UNMIL

ACTIVITY 16.1

Watch the documentary "Special Program - Shanti keSainik: India's contribution to peacekeeping operations". Follow the link:-

https://www.youtube.com/watch?v=WpltI5UTc44

ACTIVITY 16.2

Watch the documentary "Blue Helmets in Congo: Indian peacekeepers tackle multiple hurdles". Follow the link:-

https://www.youtube.com/watch?v=J3w4DsCi9xU

What You Have Learnt

- In this lesson, you have learnt that peace keeping activities create conditions that fovour lasting peace which is achieved through peace keeping operations.
- These operations aim at peace enforcement, peace making and peace keeping.
- Peace keep activities are carried out as per the charter if the United Nations - which is divided into 8 chapters.
- All the peace keeping operations are based on three principles (a) consent of the parties (b) impartiality (c) Non use of force except in self-defence and defence of the mandate. You have also come to know the contribution of Indian Armed Forces in the U.N. Peace keeping operations.

Terminal Exercises

1. Explain the three principles of UN peacekeeping.
2. Describe any three operations to show Indian contribution towards UN Peacekeeping.
3. What is the difference between peacemaking, peace keeping and peace enforcement operations? Explain.

Answers to Intext Questions

16.1

1. Peacekeeping refers to activities intended to create conditions that favour lasting peace
2. Post-Conflict Reconstruction is intended to develop economic and social cooperation meant to mend relations between the belligerents.
3. (i) Post-conflict reconstruction

Note

(ii) Peace enforcement

(iii) Build confidence and monitor

16.2

1. (a) Chapters VI, VII and VIII

   (b) Inter-related and mutually reinforcing

   (c) Consent of the Parties, Impartiality and Non-Use of Force Except in Self-Defence and Defence of the Mandate

2. On 26th June 1945 at San Francisco

3. (i) Mission capability

   (ii) Public Perception

   (iii) Huminitarian impact

   (iv) Force protection

   (v) Safety and security of personnel

   (vi) Effect of the action

   (any three factors)

16.3

1. (a) 43

   (b) Korea

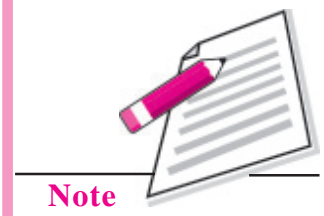
2. (a) Lebanon

   (b) Golan Heights

   (c) Congo

   (d) Ivory Coast

   (e) Liberia



Note

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17

ARMED FORCES IN DISASTER MANAGEMENT

The armed forces of India, have an important role to play in managing disasters especially providing relief to the affected people and restoring essential services like water, communication connectivity and power supply. You must be aware of natural disasters that have occurred in India. The Latur earthquake, floods in Chennai in 2015, Uttarakand floods of 2013, Tsunami in 2004, Kerala floods of 2018, etc. In all these incidents, the armed forces of India had a major role to play.

Though Armed Forces are principally involved in the security of the Nation against external threats, they are now being involved more and more in managing disasters with in the country and even in other countries in the neighbourhood. Their capability and capacity to respond quickly and efficiently and handle such situations make the armed forces the ideal choice as the first line of response.

Objectives

After studying this lesson, you will be able to:

- define disaster and the need for disaster management;
- appreciate the role of Indian Armed Forces in managing disasters;
- explain the compositions and function of NDMA and
- Practice do's and don'ts before and after cyclones.

17.1 What are Disasters

`Disasters' are occurrences that are sudden and cause huge destruction to humans, animals and environment. There are heavy losses that could be human, material,

Note

economic or environmental. Disasters are classified as natural and man-made.

`Natural Disasters' are all hazards that occur in nature like earthquakes, landslides, volcanic eruptions, floods, tsunamis, and cyclones that result in the loss of human life as well as destruction of property. Man-made disasters occur due to human action or inaction. These could be industrial accidents, transport accidents, oil spills, nuclear explosions, fire or stampedes.

- **Natural Disasters**
  - Earthquakes;
  - Floods; Urban floods;
  - Cyclones;
  - Landslides;
  - Tsunamis;
  - Heat wave.
- **Manmade Disasters**
  - Nuclear, Biological and Chemical;
  - Oil Spills in oceans;
  - Pollution

17.1.1 Disaster Management

Since natural phenomena cannot be averted, the effects alone can be managed. The loss of lives can be reduced and normal life can be restored. This is the process of disaster management. The natural disasters result in loss of homes, cattle, human lives and destruction of property.

So, the first task is to arrange for relief supplies like food, clothing and medicines to reach the affected people. Search and rescue of missing persons or animals is also part of managing disasters. Since natural disasters also severely damage infrastructure like roads, bridges, railway lines and power supply restoration of these is a principal task of disaster management teams.

17.2 Armed Forces in Disaster Management

In India the Armed Forces are the first responder when disaster occurs. They have equipment, training and a professional response to any situation. The lack of a civil defense system is also a reason for the dependence on the armed forces in times of calamity. Some specific disasters like oil spills, nuclear accidents require special equipment and training.

The armed forces possess capabilities like airlift or the ability to carry large number of men and material to any place across the country. Their expertise in the field of search and rescue is unmatched. The armed forces can also bring in equipment for repairing damaged roads or building makeshift bridges.

17.2.1 Examples of Disaster relief by Indian Armed Forces

The Armed Forces are the first responders to calls of disaster management. During the tsunami of 2004, Indian armed forces carried out one of the biggest peacetime relief operations. The armed forces helped victims not only within India but in other countries too, namely, Maldives, Sri Lanka, Indonesia. Using Naval ships, helicopters and aircraft Indian Navy supplied food, safe drinking water, medical facilities sanitation and shelter.

They also quickly restored water and power supply. The medical teams helped prevent epidemics and diseases.

- During Cyclone Wardha, Indian Navy moved supplies by ships to Chennai. Air dropping of food packets to the affected and airlifting of stranded and injured people was also undertaken.
- The neighbouring country of Nepal was severely affected by earthquake in April 2015 and the Indian Army was among the first to dispatch relief material and men to help the mountain nation tackle with the aftermath of the natural calamity. Operation Maitri was launched by Indian Army where large transport aircrafts, Mi 17 helicopters evacuated Indian and foreign citizens. Indian Air Force airlifted medical personnel, engineering teams, water, food, blankets and tents.
- In November-December 2017, Cyclone Ockhi which ravaged the coast of Kanyakumari as well as Kerala and Lakshadweep also saw the Indian Armed Forces responding. The Indian Navy transported four tonnes of food, water, blankets, raincoats and mosquito nets to the island of Lakshadweep. This included searching for missing fishermen and transporting relief supplies to the affected.

Even in the case of manmade disasters the armed forces have performed vital assistance. The accidental oil spill caused by tanker ships can be tackled by Armed Forces as they are trained and possess specialised equipment.

17.3 National Disaster Management Authority (NDMA)

India has an organisation called National Disaster Management Authority for managing disasters. They have response teams in every state as well as in the Centre. The response teams at the centre are called National Disaster Relief Force (NDRF). At the state level it is called State Disaster Relief Force (SDRF). The response teams are trained by armed forces.

Fig 17.4 - NDMA EMBLEM

NDMA VISION

"To build a safer and disaster resilient India by a holistic, pro-active, technology driven and sustainable development strategy that involves all stakeholders and fosters a culture of prevention, preparedness and mitigation."

During Floods
Do's
Turn off power and gas connection; be alert for gas leaks
Stay away from sewerage lines, gutters, drains, etc.
Evacuate low lying areas and move to safer places.
Stay away from electric poles and fallen power lines to avoid electrocution
Drink boiled/chlorinated water
Watch out for broken electric poles and wires, sharp objects and debris

Fig 17.5 - Poster Issued by NDMA for Floods

Note

17.4 Do's and Don'ts

1.BEFORE CYCLONE

- Ignore rumours, Stay calm, Don't panic
- Keep your mobile phones charged to ensure connectivity; use SMS
- Listen to radio, watch TV, read newspapers for weather updates
- Keep your documents and valuables in water-proof containers
- Prepare an emergency kit with essential items for safety and survival
- Secure your house; carry out repairs; don't leave sharp objects loose
- Untie cattle/animals to ensure their safety

Fishermen Should

- Keep a radio set with extra batteries handy
- Keep boats/rafts tied up in a safe place
- Don't venture out in the sea

2.DURING AND AFTER CYCLONE

A) **If Indoors**

- Switch off electrical mains, gas supply
- Keep doors and windows shut
- If your house is unsafe, leave early before the onset of a cyclone
- Listen to radio/transistor
- Drink boiled/chlorinated water
- Rely only on official warnings

B) **If Outdoors**

- Do not enter damaged buildings
- Watch out for broken electric poles and wires, and other sharp objects
- Seek a safe shelter as soon as possible

Fig. 17.6 Poster Issued by NDMA for Cyclones

The organisational strength, discipline and response of the armed forces make them the most appropriate responder in times of crisis especially in disaster situations. Until the National Disaster Management Authority gains more experience and expertise in handling disaster management situations, the armed forces will continue to provide vital support and remain the bulwark of efforts at managing disasters in a vast country like India.

Intext Exercises 17.1

1. State whether the statements are True or False -
   a. Tsunami is a manmade disaster. T/F
   b. NDMA stands for National Danger Management Authority. T/F
   c. During floods one must switch off electricity and gas in the house. T/F
2. What characteristics of armed forces are best suited for managing disasters?

What You Have Learnt

- Disasters are occurences that are sudden and cause great harms to humans and animals.
- There are two types of disasters. Manmade and Natural disasters.
- You have also studied as how to manage disasters that affect the common people.

- The role played by The Indian Armed Forces in helping the people by carrying out various types of relief operations are a source of inspiration.
- India now has a NDMA and is developing resources and men required to carryout disaster relief operations all over India.
- At the centre there is NDRF and the states have SDRF.
- The Armed Forces of India have the capability and capacity to assist during any type of disasters and are the first choice for providing immediate relief.
- Do's and don'ts before, during and after a disaster are also very essential to know to tackle emergency situation.

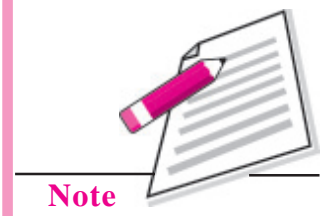
Terminal Questions

1. Explain the role of armed forces in managing disasters with the help of examples.
2. Using the examples as illustration how would you assess the ability of armed forces in disaster management?
3. What is the full form of NDMA? Describe its organisation and functioning.
4. Highlight any five things to be done before a cyclone and three things each during and after a cyclone.

Answers to Intext Questions

17.1

1. (a) False
   (b) False
   (c) True
2. Discipline, Training and Professional response.



Note

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18

ARMED FORCES IN INTERNAL SECURITY

In the previous lesson you have studied the role of the Armed Forces during crisis like disaster management and peacekeeping operations. The armed forces also plays an important role in dealing with insurgensies / disturbance within the country. What you must understand is that when it comes to assessing the role of armed forces in protecting its respective nation from external threat it is generally common for all nations.

External threat is related to borders whereas internal threat is from the people of the country due to political, ideological reasons like left wing extremism etc. Maintainance of internal security in the responsibility of the Ministry of Home Affairs but Armed Forces are also called in when situation cannot be dealt by CRPF.

In this lesson we will specifically learn about the role of the Indian Armed Forces and the Indian intelligence agencies like the "Intelligence Bureau" (IB) and the " Research and Analysis Wing" (RAW), in the internal Security of India.

Objectives

After studying this lesson, you will be able to:

- appreciate and explain the role of Indian Armed Forces in internal security;
- know about the special forces tasked to protect India's strategic assets;
- explain the role of Indian Intelligence Agencies IB and RAW in India's internal securities.

18.1 Role of Indian Armed Forces

Our nation has faced the problem of insurgency and terrorism for many years. The state of Jammu & Kashmir (J & K), the Northeastern States are affected by insurgency and terrorism. As a result of the violence caused due to insurgency and terrorism in these regions, many civilians and security personnel have lost their lives.

Our armed forces are playing a very important role in the fight against the insurgents

and terrorists operating in the region and protecting India's citizens and its integrity. However, the dynamics of the Indian armed forces involvement in these operations are significantly different due to the nature of the origin of the insurgency in these specific regions.

Let us see the figure below to understand the dual role of the Indian Armed Forces in the fight against insurgency and terrorism.

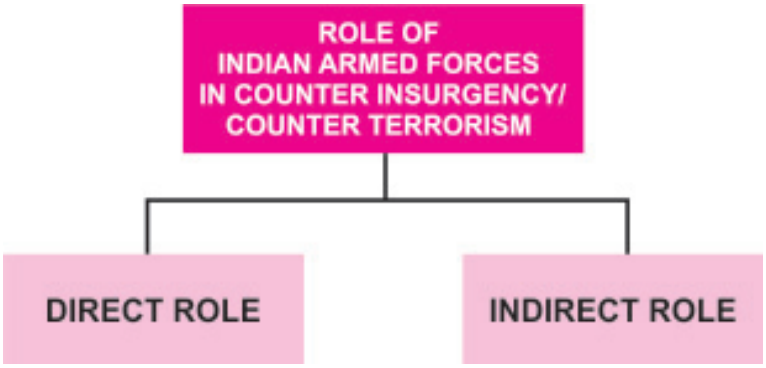


Fig 18.1 Dual Role Indian Armed Forces in Counter Insurgency/ Counter Terrorism

18.1.1 The Direct Role

The Indian Army has been playing a direct role in fighting insurgency and terrorism in J & K and the Northeastern States for decades. This is despite the fact that the Army is a force that is raised and trained primarily to protect India from external threat.

However, the reason for Army's direct involvement in these volatile regions is because there is enormous amount of external involvement in abetting and supporting the insurgency with the intent to cause social unrest in India. The situation is such that the CAPF can not maintain peace & deal with the insurgants. In J&K our hostile neighbour to the west i.e. Pakistan mainly instigates the problem of insurgency and terrorism.

For over three decades the terrorist operating in Kashmir are being provided direct assistance for their activities in J&K. Pakistan has organised terrorist camps situated in Pakistan Occupied Kashmir (POK). Pakistan provides following assistance to the terrorists:

- Training camps for newly recruited terrorists,
- Provide launchpads for carrying out terrorist attacks across the border on the Indian Soil.
- Terrorists are provided arms ammunition communication equipment for their operation in J&K.

Hence, for countering this menace of cross border terrorism in J& K the Army has been taked with bring peace to the state by readucing the violence.

Note

As part of the direct involvement the Indian Army has raised a specialised counter insurgency force named Rashtriya Rifles (RR) which is specifically trained to carry out counter insurgency operations in the high altitude theatre of J &K.

In the Northeast a number of insurgent groups like the United Liberation Front of Assam (ULFA), National Democratic Front of Bodoland (NDFB) and the United National Liberation Front (UNLF) are carrying out their terrorist operations against the Indian establishments by operating across the porous border between India and Myanmar. These terrorist groups have their bases in Myanmar and receive their arms and ammunitions from various Southeast Asian nations.

The border is very difficult to be fenced mainly due to its geographic terrain which consists of mountains, valleys and dense forests. Hence the insurgent groups easily move in and out of India to carry out their terrorist activity. Due to the nature of the border it makes the task of the Indian security forces to patrol and secure the boarders extremely difficult.

Assam Rifles

Similar to the Rashtriya Rifles in J & K, in the Northeastern States the Assam Rifles is the specialised force that carries out anti- insurgency operations in difficult terrain of the region. The Assam Rifles raised as Cachar Levy in 1835 is the oldest Central Para Military Force in India. The Force was raised mainly to guard the alluvial plains of Assam from the wild and unruly tribes inhabiting the surrounding hill tracts. This was the earliest embodied unit of what eventually developed into the Assam Rifles.

The Force is a potent organization with 46 battalions and its associated command and administrative back up. It is designated by the GoM committee as the Border Guarding Force for the Indo - Myanmar border and is also its lead intelligence agency. Look at the logo of the Assam Rifles given below.

Fig.18.2 Assam Rifles Logo

So, what functions does the Assam Rifles perform? Some of the specialist functions are -

Note

- Conduct counter insurgency operations in the north-east and other areas where deemed necessary, under control of the army.
- During peace and 'proxy war', ensure security of the indo-china and indo-myanmar borders.
- During war, rear area security in the area. Act as penultimate interventionist force of the central government in internal security situation, under the control of army; when the situation goes beyond the control of central paramilitary operations.

Intext Questions 18.1

1. Fill in the Blanks:

   (a) The name of specialised counter-insurgency force of the Indian Army in the State of J&K is _____

   (b) The oldest paramilitary force of India comprised fully of Army personnel operating in the Northeastern States is _____

   (c) The Insurgents of the Northeastern States make use of _____ International border to carry out their insurgency activities against the Indian Government.

18.1.2 The Indirect Role

So far we have seen that the Indian Army is playing a direct role in the fight against insurgency and terrorism in J & K and the Northeastern States due to the complex role of external involvement in the nature of the security threat there. However the nature of the security threat in Central India posed by the Naxalite insurgents is very different from that of the situation in the J&K and the Northeast.

The cause of insurgency in Central India is mainly due to the socio-economic problem in the tribal belt of India. The people who are the perpetrators of Naxal insurgency are essentially misled Indians who are lured into carrying arms against the Indian establishments to create a communist government.

Despite the fact that the Naxals are carrying out a violent armed struggle against the Indian establishment and population for decades, the Indian Government has steadfastly refrained from using its Armed Forces directly against the Naxalites. We must understand the fundamental reasons for this. This is due to two factors, namely

- First, the perpetrators of the Naxal insurgency are politically misguided Indians from poor socio-economic background in the tribal belt of India.

Note

- Second, it is a fact that it is taking place in Central India away from our nation's boundary, which reduces the chances for hostile external factors utilizing the Naxal problem as an opportunity to create national security problems for India.

We must understand from the above factors that the Indian Armed Forces which has the fundamental objective of protecting India and its citizens against external threats are not tasked to carry out anti-naxal operations as it would mean that the Indian Government is using armed forces against its own citizen.

However, the Naxals are armed and therefore require force to stop them. The Government of India is primarily using its paramilitary force Central Reserve Police Force (CRPF) and the state police of the respective naxal infested States in Central India. So far the Indian Armed Forces have played an indirect role in the fight against Naxalism. Let us see those indirect roles that the Indian Armed Forces is currently playing to fight the naxalites:

- The Indian Army trains the CRPF commandos in the Art of jungle warfare and to defuse the Improvised Explosive Devices (IED) that are predominantly used by the Naxalites in their attacks against the security forces.
- The Indian Air Force (IAF) has employed its helicopters to carry out immediate medical evacuation of wounded paramilitary soldiers from the naxal insurgency hit areas where counter-insurgency operations are taking place. Over the recent years the IAF transport helicopters, the Mi-17 have also been used to transport the paramilitary troops fighting the Naxalitis.

Apart from this, the IAF has also used its unmanned aircrafts to carry out aerial reconnaissance of the Naxal movement and shared the information with the CRPF commandos carrying out operations on the ground.

18.1.3 Protecting India's Strategic Assets

Another important task of the Indian Armed forces in India's internal security protection of India's strategic assets. Before go to the role of Indian Armed Forces in the protection of the strategic assets of India, we must know what are strategic assets of a nation.

The term 'strategic assets of a nation' denotes the important military and civilian infrastructures, which are essential for a nation's security, technological advancement and economic growth.

The strategic assets of India include the following:-

- Military Bases
- Ports and airports
- Oil refineries

Note

- Nuclear power plants
- National capital - Parliament
- Important bridges across major rivers
- Dams - example BhakraNangal dam
- Offshore oil rigs

These infrastructures are also very essential for the three wings the Armed Forces to operate during wartime. Assets like naval ports and airbases are the most vulnerable because terrorists and other hostile forces may attempt to sabotage them as our powerful warships and aircrafts are the most vulnerable while they are on their respective bases.

The 2016 Pathankot airbase attack is an important example on how the terrorist groups may target an important strategic asset of India. Hence it is the vital duty of the our armed forces to protect their respective strategic assets.

18.2 Special Forces

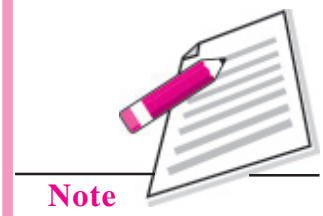
What the specific divisions of the armed forces that are specially tasked to protect India's strategic assets? These are -

- **The National Security Guard (NSG)** is a special forces unit which derives its manpower from the Indian Army. The primary task of the NSG is to combat terrorism in order to protect states against internal disturbances. The NSG engages in important internal security operations like rescuing hostages from terrorist attacks such as hijacking and eliminating the terrorists who carry out these attacks. You can find many instances where the NSG has performed a brilliant role in rescuing hostages from terrorist attacks.
- **The `MARCOS'** is also a special forces units of the Indian Navy. It is specially tasked to protect the important naval assets and bases. They also engage in conducting amphibious operations against terrorists and antipiracy operations. They are the Navy's version of NSG.

  The MARCOS commandos played a vital role during the 2008 Mumbai attacks along with the NSG. MARCOS play an active role in the counter-terrorist operations in J & K.
- **The Garud Commando Force** is the Special Forces unit of the IAF and equivalent to its counterparts in the Army and Navy, which are NSG and MARCOS respectively.

  The most important task of the Garud Commando Force is to secure the critical air force bases and other ground installations.

  During the 2018 Pathankot airbase attack the Garud Commando Force played



a vital role in eliminating the terrorists who attacked the base.

Intext Questions 18.2

1. What is the name of special force unit comprised of personnel from Indian Army tasked with counter-terrorism and hostage rescue operations?
2. Which is the amphibious special force unit of the Indian Navy tasked with protecting Naval assets and counter terrorism operation?
3. What is the commando unit of the Indian Air Force tasked to secure vital airbases and ground installations of the Air Force?

18.3 Indian Intelligence Agencies and India's Internal Security

Our Intelligence agencies play an important role in ensuring India's internal security. The deadly threat of terrorism can only be prevented through an efficient intelligence mechanism that shall form an essential part of our National Security.

For a Nation like ours, which is faced by multiple varieties of terrorism from both internal and external sources, we have two specialised agencies to collect intelligence from within India and outside India which are diagrammatically represented here for you.

Intelligence Bureau (IB) Internal Intelligence Agency
Research and Analysis Wing (RAW) External Inteligence Agency
INDIAN INTELLIGECE APPARATUS

Fig 18.6 - India's Intelligence Agencies

18.3.1 Intelligence Bureau (IB)

IB is India's oldest intelligence agency formed in 1887 during the British colonial era. It is India's internal security agency responsible for managing domestic threats. IB

technically falls under the authority of Ministry of Home Affairs. IB is responsible for counterterrorism, counterintelligence, and intelligence collection in border areas, infrastructure protection, and anti-secession activities.

Until the 1960's the Intelligence Bureau was tasked with collecting both internal and external intelligence. However after the formation of RAW in 1968, the IB is fully dedicated towards collecting internal intelligence.

18.3.2 Research and Analysis Wing (RAW)

The Research and Analysis Wing (RAW) is our primary foreign intelligence agency. After the intelligence failures of the Sino-Indian and Indo-Pakistani wars prior to 1965, our Government felt the need of dedicated foreign intelligence agency and as a result RAW was established in1968 under the leadership of Shri RameshwarNath Kao. who became its first director.

We should note that within just a few years after its formation the RAW played a vital role in India's astounding success in the liberation of Bangladesh in 1971 and the accession of Sikkim in 1975. Today, RAW is considered as one of the top intelligence agencies of the world. The primary task of RAW is to gather intelligence from India's hostile neighbors, to deduce their plans against our Nation and make them unsuccessful in their intentions to harm India.

Intext Questions 18.3

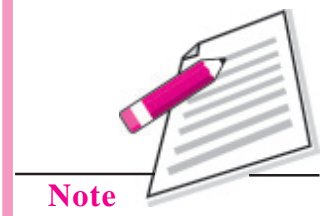
1. Fill in the blanks:-

   (a) India's External Intelligence Agency RAW was established in _____.

   (b) The first director of RAW was _____.

What You Have Learnt

- Role of the Indian Armed Forces in counter terrorism and counter insurgency.
- The Direct and Indirect role of the armed Forces in Internal security of the country.
- Assam Rifles and its role in external and internal security of the country.
- The strategic assets of our country and their protection.
- There are some special forces which employed in safe guarding our strategic assets.



- Indian Intelligence Agencies with special reference to RAW and IB.

Terminal Exercises

1. Explain the direct and indirect role of the Indian Armed Forces in upholding India's Internal Security.
2. Identify the various special forces of the Indian Armed Forces that are tasked with protecting India's Strategic Assets. Explain their contribution.
3. Explain the importance of intelligence agencies for India's internal and external security.
4. What special functions does the Assam Rifles do?

Answers to Intext Questions

18.1

1. Rashtriya Rifles
2. ASSAM Rifles
3. Indo - Myanmar

18.2

1. The National Security Guard (NSG)
2. The 'MARCOS'
3. The Garud Command Force

18.3

1. a) 1968
   b) Shri Rameshwar Nath Kao